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NOVEMBER 15, 1959
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TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

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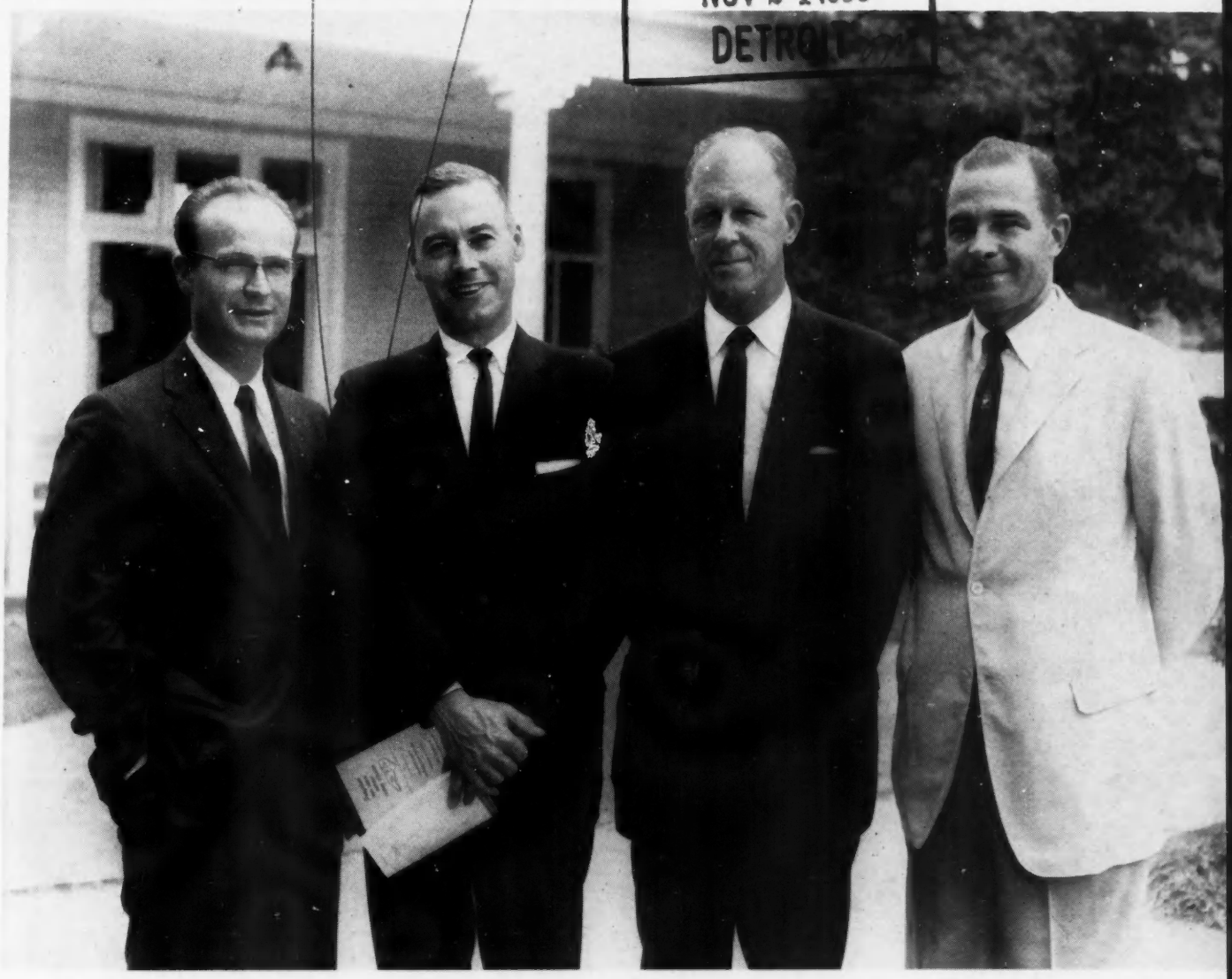

MEETING DEMAND FOR RURAL 1-PARTY SERVICE

Make Your DDD Successful, by George B. Forbes

DEPREC[illegible] PRACTICE, by Dr. G. M. Jones

[illegible]s Traffic," by D. A. Perigo

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GENERAL OFFICES
CASEY, ILLINOIS
O. A. LOGUE, PRESIDENT

February 12, 1959

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Russell Logue
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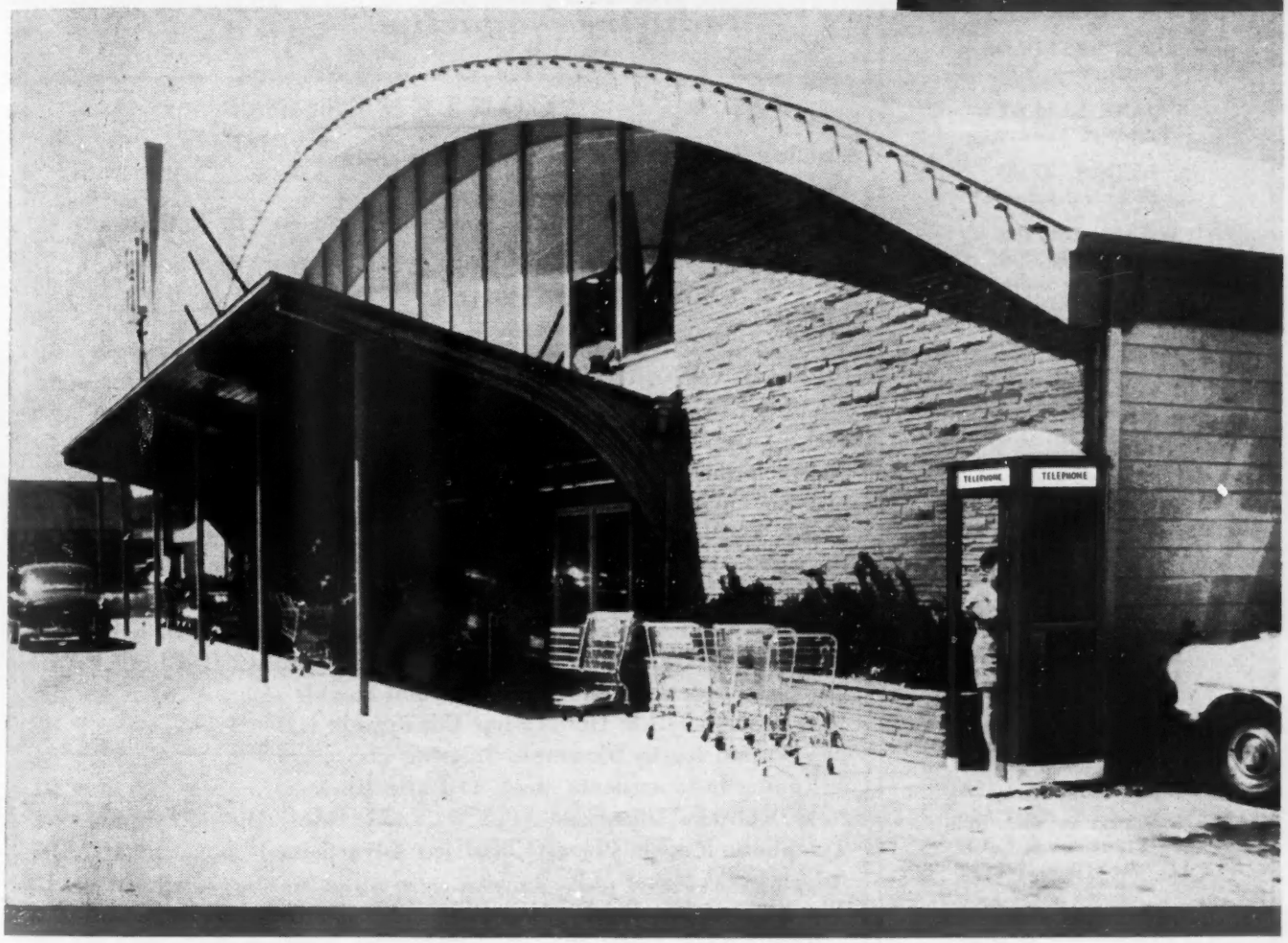

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TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

NOV. 15, 1959

VOL. 63, NO. 22

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The TE&M Front Cover

Approximately 400 attended the 28th annual convention of the North Carolina Independent Telephone Association at the Carolina Hotel, Pinehurst, N. C. Front cover shows new association officers (l to r): Hylton Wright, secretary-treasurer; P. J. Long, president; Thomas Sawyer, vice president; and W. B. Garnett, newly elected director.

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CONVENTIONS

OKLAHOMA Tel. Association, Skirvin Hotel, Oklahoma City, Nov. 18-19.

SOUTH DAKOTA Tel. Assoc., Marvin-Hughitt Hotel, Huron, S. D., Nov. 18-19, 1959.

FLORIDA Tel. Association, Robert Meyer Hotel, Jacksonville, Fla., Nov. 30, Dec. 1, 1959.

MINNESOTA Tel. Assoc., St. Paul Hotel, St. Paul, Minnesota, Feb. 7-10, 1960.

LOUISIANA Tel. Assoc., Jung Hotel, New Orleans, La., Feb. 24-25, 1960.

KENTUCKY Tel. Assoc., Phoenix Hotel, Lexington, Ky., March 1, 1960.

TEXAS Tel. Assoc., Baker Hotel, Dallas, Texas, March 7-8, 1960.

OHIO Tel. Assoc., Deshler Hilton Hotel, Columbus, Ohio, March 28-30, 1960.

IOWA Tel. Assoc., Ft. Des Moines Hotel, Des Moines, Iowa, April 5-6, 1960.

NEBRASKA Tel. Assoc., Hotel Not Announced. Omaha, Nebraska, April 19-20, 1960.

INDIANA Tel. Assoc., Claypool Hotel, Indianapolis, Indiana, May 4-5, 1960.

ILLINOIS Tel. Assoc., Abraham Lincoln Hotel, Springfield, Ill., May 19-20, 1960.

KANSAS-MISSOURI Tel. Associations, Town House, Kansas City, Kans., May 23-24, 1960.

PENNSYLVANIA Tel. Assoc., Bedford Springs Hotel, Bedford Springs, Pa., June 6-7, 1960.

CALIFORNIA Tel. Assoc., Fairmont Hotel, San Francisco, Calif., June 8-10, 1960.

WASHINGTON-OREGON Tel. Assoc., Sheraton Portland Hotel, Portland, Ore., June 16-17, 1960.

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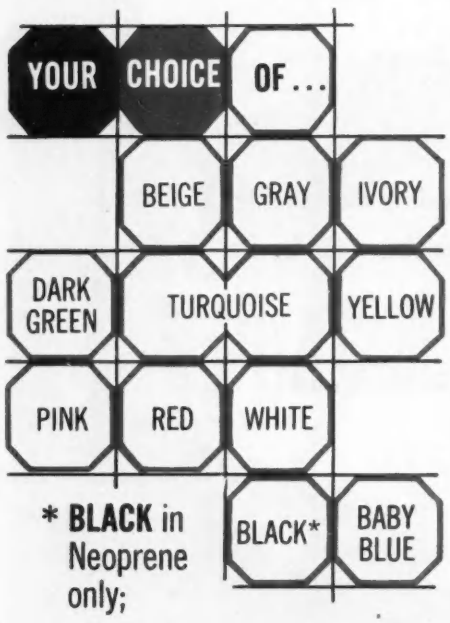

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INDUSTRY NEWSLETTER

5.5% Telephone Growth Rate Forecast

Telephone industry is expanding at rate that would put about 121 million telephones in service in U. S. in 1970, or about 50 million more than at present, says Business & Defense Services Administration, U. S. Dept. of Commerce. According to same source, telephone density trend in U. S. indicates in 1970 there will be about 56.6 telephones per 100 population compared with roughly 39 telephones per 100 population in service at end of 1958. From January, 1951 to December, 1958, number of telephones increased from 43 million to 66.6 million. Telephone growth rate this year is expected to be about 5.5% as compared with population growth of 1.6%.

* * *

Phone Service Bill Rejected in Alabama

Bill which would have required telephone companies to improve service or face court action has been killed by **Alabama House Judiciary** Committee. Proposal provided that if 60% of subscribers at any exchange protested in writing about poor service, State Public Service Commission would be called in to investigate. If commission failed to obtain desired results, then protesting group would be entitled to secure court order requiring all funds coming into utility to be used solely for improving facilities.

Principal opposition to bill came from **Harry Lackey,** v.p. of **Southern Bell** in Alabama. He said measure was unnecessary because telephone subscribers already had right of protest to commission in event of poor service. He also said feature which would require current funds to be used in improving service would "force most utilities into bankruptcy in 30 days." No utility, he said, uses current funds for improvements and to do so would be ruinous to firms.

* * *

So. Bell Sells $70 Million Debentures

Southern Bell Tel. & Tel. Co. obtained 5.42% annual net interest cost in selling its $70 million block of triple-A rated debentures, due Oct. 1, 1994.

Southern Bell's most expensive previous bond borrowing was in October, 1929, when it accepted 5.32% annual net interest cost to sell $32 million issue. On its last trip to bond market, Dec. 9, 1958, company obtained 4.61% annual money cost in selling $70 million block of 35-year debenture 4⅝s. Since that time interest rates have tended generally higher for corporations borrowing at long-term. 5.72% rate accepted by **New England Tel.** in September was highest on record for bond issue by a Bell System unit since Nov. 5, 1923. At that time, **American Tel. & Tel. Co.** incurred 5.95% annual interest cost on $100 million debenture borrowing.

* * *

FCC Dismisses Gen. Tel. Applications

Federal Communications Commission (FCC) has dismissed 36 applications from telephone companies in **General Tel. System** which have been on file at Commission since March & April seeking authorizations & rule waivers to shift common carrier microwave stations from 890-942 megacycle band to 840-890 mc UHF television band.

In their applications, telephone companies had pointed out that under FCC reallocation order which turned 890-942 mc band over to government radio-

positioning uses on shared basis with industrial, scientific, & medical (ISM) functions, effective April, 1958, new common carrier point-to-point assignments in band are prohibited. General companies said they anticipate interference to their microwave systems in 1961, when reallocation timetable lifts any interference protection from government & ISM operations.

Independent telephone industry, in particular, stressed need for common carrier point-to-point frequencies in 840-890 mc area during FCC's inquiry into allocation of nongovernment frequencies between 25 & 890 mc earlier this year, pointing to little use which UHF TV is making of the band.

In letters to General companies, FCC said favorable action on their applications "would be premature in view of present consideration of identical proposals" made by Independent telephone industry in 25-890 mc proceeding. Dismissals were made "without prejudice to refiling applications for changes in frequency to any suitable band which may later be made available for this purpose."

* * *

FCC Approves Two Bell Acquisitions

Southwestern Bell Tel. Co. received FCC approval for: (1) acquisition of toll facilities of **United Tel. Co. of Mo.** between Waynesville & Crocker, Mo., & in exchange United will receive Rolla-Newburg Junction, Mo., toll circuits serving Fort Leonard Wood, Mo., & $9504 in cash; & (2) purchase of **Kenney (Tex.) Tel. Co.,** which serves 109 subscribers in area otherwise served by Southwestern Bell. Purchase price for facilities is $6000.

* * *

REA Borrowers Establish Legislative Group

Informal group urging retention of existing Rural Telephone Law, particularly in connection with 2% interest rate, reportedly was formed at recent meeting in Washington, D. C. Group is understood to consist largely of Independent telephone borrowers, since large number of cooperative borrowers are members of National Telephone Cooperatives Association, which also supports existing law.

Primary concern of group, in addition to interest rate, is continued availability of REA funds. In this connection, one Washington source said REA has available funds of $104,000,000 in 1960 fiscal year, ending next June 30; already has approved $42,457,000 in loans; has $100,869,000 in applications on hand; & therefore "has run out of money." REA has pointed out in past, however, that not all applications result in approved loans, & amount approved frequently varies widely from the amount sought in application.

* * *

TV Phone System Patented

Bell Telephone Laboratories, Inc., research affiliate of **American Tel. & Tel. Co.,** has received patent for a "picture phone," through which people can be seen as well as heard. System, which employs two-way television over ordinary telephone lines, produces small picture resembling half-column newspaper halftone, about twice area of a postage stamp. Pictures have been transmitted experimentally by method over varying distances, even across the continent, but inventor **Floyd K. Becker** & other Bell engineers are dissatisfied with quality. They want to improve it before "sight with sound" is offered to public . . .

* * *

Upward Trend In REA Loan Requests To Continue

Continuing upward trend in farm telephone loan applications to Rural Electrification Administration, which conceivably could double in next fiscal year, was pointed to Wednesday, Oct. 28, at press conference held by members of telephone advisory committee to REA Administrator David A. Hamil. **Harold Erickson,** pres. of Minnesota Central Tel. Co. & chairman of advisory group, said he thought application load might double in fiscal 1961, as com-

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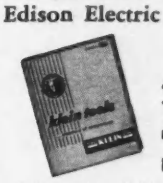

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INDUSTRY NEWSLETTER

(Concluded from page 9)

pared with recent experience. Hamil said he thought this forecast was "bit high," but that obviously trend is upward & that it probably will continue to go up for several years, although not as sharply as in past year or so.

* * *

REA Telephone Borrowers Serve Over 900,000 Customers

Telephone borrowers of Rural Electrification Administration now serve more than 900,000 rural subscribers, 85% with dial telephones, it was pointed out Oct. 26, at ceremonies opening observance of 10th anniversary of REA's farm telephone program. REA has approved loans totaling more than $610,000,000 to 679 borrowers, 469 commercial companies & 210 cooperatives. Also noted was fact that 10 years ago 38% of all U. S. farms had telephones, while today figure is 60%.

* * *

Carolina Tel. Stockholders OK Stock Split

Stockholders of **Carolina Tel. & Tel. Co.,** Tarboro, N. C., have approved split of company's capital stock on a five-for-one basis. Effect of stock split is to reduce par value of present common capital stock from $100 per share to $20 per share.

* * *

Mixed Reaction On P. O. Facsimile Mail Service

Some of the wraps have been taken off reported plans of Post Office Department to test transmission of 1st Class mail by facsimile, amid mixed reaction from official quarters & elsewhere which raised doubts as to whether "fax mail" will ever become a reality.

First general reports of Post Office plans came during annual convention of nation's postmasters in Washington, D. C. Previously, the department had been reluctant to discuss tests it has been conducting, under $140,000 contract with **International Tel. & Tel. Corp.,** of coast-to-coast facsimile mail for past several months.

President Eisenhower and Postmaster General **Arthur Summerfield,** in addresses to postal officials, alluded to facsimile system. Summerfield, in subsequently commenting on published reports about it, said: "We have many programs under consideration to modernize the Post Office Department and to provide for more rapid and economical mail service in the future. Facsimile mail service is one of the programs under consideration. It is still in the research, developmental, and experimental stage . . . When the tests on facsimile mail transmittal are concluded, the results and recommendations of this department will be made public."

Another official who would have much to say about such a Post Office program, **Senator Olin D. Johnston** (D., S. C.), chairman of the Senate Post Office & Civil Service Committee, commented: "On the surface, I would oppose (facsimile mail) because it would set up a federal teletype service, apparently in competition with free enterprise, such as Western Union and the telephone companies."

There was wide range of unofficial views about implications & possibilities of fax mail service. Foremost were questions of government competition with private industry, particularly in view of previously expressed principles of Eisenhower administration on this subject. Question arose not only as to economic effects on communications carriers, but also on transportation carriers who haul the mail.

* * *

Deaths

Mrs. Esther Martin, wife of late telephone pioneer **Talbot G. Martin,** died in Chicago Oct. 26 at age of 80. Mrs. Martin is survived by a son, George T.

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Universal COLOR CODING
for all MULTIPAIR
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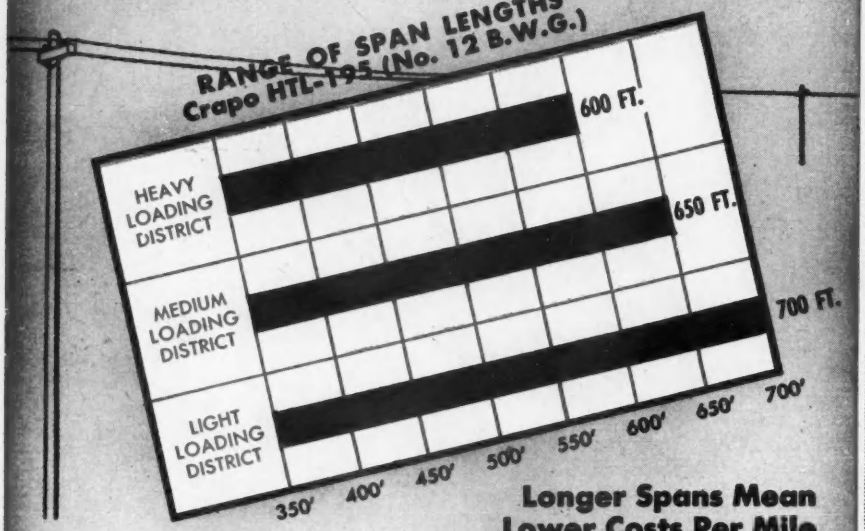
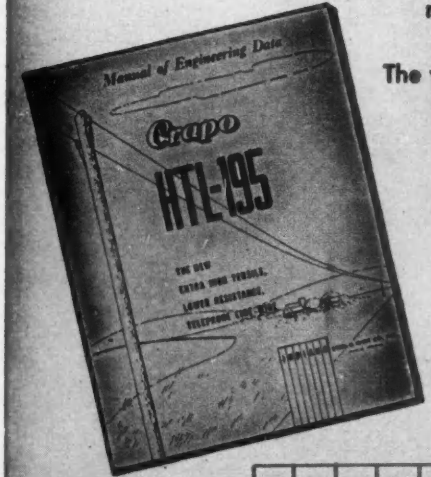


Longer Spans Mean Lower Costs Per Mile

You can cut the number of pole structures to a minimum when you use Crapo HTL-195 in building rural telephone lines. Extra long span construction, made possible by the high physical strength of this new wire, means marked savings in material and installation costs.

The voice transmission quality of Crapo HTL-195 is equal to that of Crapo HTL-135 and superior to older grades of ferrous wire.

Pertinent technical data have been prepared to assist engineers in designing and building extra long span lines with Crapo HTL-195.



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Thanksgiving Day

AS TELECOMMUNICATIONS workers, have we any reasons to be thankful that are not shared by every other American? A glance back at the beginnings of the Thanksgiving celebration may suggest an answer.

In 1777 the first Thanksgiving Day in the United States was initiated by a proclamation addressed to each of the States by the Continental Congress. That proclamation took many weeks to reach all of its various destinations. Except for a few primitive semaphores used over short distances, the limiting speed of human communication was then, as it had been since the dawn of recorded history, the speed of travel by horseback or sailing ship. George Washington could send orders to his subordinates no faster than Alexander the Great had done twenty-one centuries before.

More than 80 years after our first Thanksgiving Day, our "Pony Express" amazed the world; but in the 12th century Jenghis Khan established a bigger and better horse courier service that operated efficiently over a much greater area.

If we should plot a graph of the progress of human communications, for the first 7,000 years it would be a horizontal line, or nearly so. It might show a dip when the Roman Empire collapsed; perhaps a lift when Johann Gutenberg introduced his movable type and another lift when Columbus, Drake and Magellan expanded our horizons; but there would be no pronounced upward turn until well along in the 19th century.

Then the achievements of George Stephenson, Robert Fulton, Samuel Morse and Alexander Graham Bell — of which the telephone is the most important — would start our curve on its swift and sudden climb towards some unpredictable zenith. The latest pin point on that curve, today, would mark our preparations for worldwide

UTRY OBSERVATIONS By L. A. GRITTEN

transmission of messages via satellites in space, with lunar repeater stations not too far away.

Only a poet with a flair for historical research could adequately express all that this has meant, and will mean in the future, in lifting men and women out of loneliness and ignorance, towards a wider, nobler, happier concept of life.

So, on November 26th, somewhere between the Martinis and the coffee, let us humbly offer thanks that we are privileged to play our parts in an exciting industry that is reaching up to the stars; and let us be grateful and proud that ours is a service that has done more than any other to raise the level of human tolerance and understanding.

* * *

What Happens To Them?

A SADDENING thought at every convention: Clever new tools and devices are displayed, that seem much superior to what we now employ for the purpose, yet many of them never come into general use. The inertia of existing equipment and capital, perhaps. Twenty-five years ago, Howard Scott, the autocratic chief of the Technocrats, told us that a safety razor blade could be made that would last practically forever without honing; but, as it would put Gillette and the others out of business, we shall never be able to buy one — unless the Technocrats take over!

* * *

1,000,000 Amperes

SOME THINGS are hard to visualize. A billion dollars, for instance. Or a one-million ampere spark. At the G.E. plant in Pittsfield, Massachusetts, they are building a 60-ton induction coil whose 1,000,000 ampere spark will explode compressed air and drive it through a wind tunnel (for aircraft tests) at 20 times the speed of sound. That we would like to see. After fiddling with relays that

L. A. GRITTEN'S "Industry Observations" appear exclusively in "Telephone Engineer & Management."

operate on a few milliamperes, that spark is too much for our imagination.

* * *

Attract — Or Compel?

LAST YEAR, twenty-five American corporations spent about $1,233,000,000 for national advertising. General Motors headed the list with 1958 expenditures of about $137,500,000. No public utility is included in the list. American Telephone & Telegraph Company was among them in 1957 but last year it was not in the first twenty-five.

Every automobile manufacturer who advertised heavily on television in 1958 sold less than in 1957. On the other hand, American Motors scored an 80 per cent sales increase over 1957; not one penny of its $6 million advertising budget went into TV — the advertising was placed mostly in magazines and newspapers. Apparently we are not alone in our dislike of TV commercials. Advertisements, like wine, women and song, are best appreciated when they attract freely by their art and their interest, and are not forced upon us.

* * *

Wanted: Another Henry Ford

U. S. AIR FORCE engineers have surveyed the appalling areas selected for extensions of the DEW line, 1200 miles east of Baffin Island, by helicopter.

About two years ago, Pacific Gas & Electric Company used a helicopter to set power poles in a rugged, almost inaccessible location in California. Sixty-two poles, completely equipped with crossarms, insulators, guy wires and so forth, each weighing about 1100 pounds, were carried two miles and dropped into place. What would normally have taken weeks was completed in nine hours.

Small, simple, reasonably priced helicopters would be a Godsend to operating telephone companies, for everyday routine maintenance and construction. If a helicopter suitable for personal use were popularized the congestion of our highways would be relieved and a new vista of social and business life would unfold. People generally will not take to the air in ordinary planes. The average man lacks the physical efficiency to fly them. But a low-powered, low speed helicopter can be as practicable as an automobile — and safer. The world is waiting for another industrial genius to transform our lives with "whirlybirds" as Henry Ford did with automobiles.

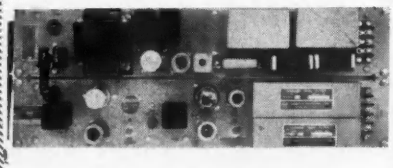
* * *

Antiques Not For Sale

IN CASHMERE, Washington there is a museum of antiques, devoted mainly to the tools, weapons, clothing and artifacts of the "Old West" era. A major attraction is a pair of magneto wall telephones, of comparatively modern design. They are connected. They are located on different floors. Visitors are invited to grind the crank and talk to each other. They are thrilled by this brief reversion to life in the remote and primitive past.

Very nobly, we resisted the temptation to post a notice stating: "There are still over 300,000 of these magneto phones in service in Independent exchanges." — *L. A. Gritten.*

MULTI-PARTY SUBSCRIBER CARRIER TELEPHONE EQUIPMENT



TYPE 16B

WRITE FOR SPECIFICATIONS AND PRICES

CARRIER AND MICROWAVE

BUDELMAN bec

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BUCKEYE TELEPHONE & SUPPLY CO.
1250 KINNEAR ROAD, COLUMBUS, OHIO

NELSON ELECTRIC SUPPLY COMPANY
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TELEPHONE ELECTRONICS
P.O. BOX 571, STOCKTON, CALIFORNIA

THE ENGINEERING SERVICE
P.O. BOX 178, BUTTE, MONTANA

EXPORT
TELE-RADIO SYSTEMS LTD.
3534 DUNDAS ST. W., TORONTO 9, ONT.

WESTREX INC.
111 EIGHTH AVENUE, NEW YORK 11, N. Y.

BUDELMAN ELECTRONICS CORPORATION
375 FAIRFIELD AVE., STAMFORD, CONN.

LETTERS

"One Cut Brings Another"

TO THE EDITOR: — "The Federal Government does not show good judgment. It should try to raise telephone rates and telephone net income because Uncle Sam gets most of it.

"The Government just cut the Bell Telephone toll rates by $50,000,000. By so doing, they first lose $5,000,000, the 10% direct Federal Tax. They next lose 52% of $50,000,000, or $26,000,000, the Federal Income Tax.

"This makes a direct tax loss of $31,000,000, or 62% of $50,000,000 to Uncle Sam. In addition, an unknown amount of personal income tax and State income tax is lost from a loss of dividends.

"Such action depresses the market for telephone company securities. This chokes back the expansion and advancement of the telephone industry, thus losing more taxes. Who gets the biggest 'kick in the pants?' Why, Uncle Sam of course.

"So Uncle Sam places an additional 1¢ tax on each gallon of gasoline we purchase. We, the 'dear public,' get soaked anyway.

"If the Federal Government would 'take a page' from the telephone industry's book, it would strive for efficient, economical operations, thus eliminating the necessity of always increasing the tax rate and thus discouraging inflation."

TAXPAYER

* * *

"Spec Book" Binders

TO THE EDITOR: — "We do work for utility companies and have been extremely interested in your recent magazines, particularly the section on 'Plant Man's Spec Book.' . . . We would . . . be interested in knowing if binders are available for these and would it be possible to get six or 12 additional Plant Man's Spec Books? Your consideration in this matter will be appreciated as I am really interested in binders for 'Plant Man's Spec Book'."

Mrs. Elise S. Surmont,
Office Manager,
Ashland Tree Experts,
2nd National Bank Bldg.,
Ashland, Ky.

We're developing a binder. Watch for announcement in TE&M.—Editor.

* * *

Tree Trimming 'Specs'

TO THE EDITOR: — "As we experienced a fatality injury to an employe while in the act of tree trimming, naturally the data in *Telephone Engineer and Management's* 'Plant Man's 'Spec' Book' on pages 67 to 73 in the June 15, 1959 issue was most interesting. Is it possible to obtain reprints or copies of the booklet? If so, what is the cost?"

C. M. Schaefer,
Supt. of Safety & Fire Prevention,
Chesapeake & Ohio Railway Co.,
Room 1206, C&O Bldg.,
Huntington, W. Va.

It will be several months before the "Plant Man's 'Spec' Book" will be reprinted. We will be glad to send extra sets of tear sheets. — Editor.

* * *

Sales Packet Inquiries

TO THE EDITOR: — "I would appreciate knowing how to obtain the Sales Training Packet mentioned in 'Commercial Department Notes,' June 1, 1959, issue of *Telephone Engineer and Management.* I have followed Mr. Stacey's articles with great interest and have found them very helpful in our own commercial department organization."

George Knapie,
Treasurer & Commercial Supt.,
Warren Telephone Co.,
Warren, Ohio.

TO THE EDITOR: — "We recently read with great interest your (Mr.

FROM READERS

TE&M Readers love to write — and we're happy they do. This peek at the editor's mail brings you the thoughts of our readers on (1) that 50 million dollar slash in toll rates; (2) Allan Stacey's article on "Sales Training"; (3) that "Hoffa Threat"; (4) "Spec" book binders; tree trimming 'Spec's.'

Stacey's) excellent article in *Telephone Engineer and Management* on your training program using the films 'Family Affair' and 'Four Steps to Sales.' We have used the films in somewhat the same manner in Ohio for several years and like them very much.

"However, we are constantly looking for sales aids and will appreciate very much receiving the packet you used, particularly the pamphlets called 'How to Turn Telephone Inquiries into Sales' and 'Think of the Rainbow in Recommending Color.'

"Thank you very much and good selling."

Marie John,
Staff Assistant,
Ohio Bell Telephone Co.,
50 *West Bowery St.,*
Akron 8, *Ohio.*

TO THE EDITOR: — "Just finished your (Mr. Stacey's) interesting article 'A Business Office Training Program.' Please advise the method of obtaining one of the Sales Packets you wrote about."

Robert R. Miller,
General Commercial Manager,
General Tel. Co. of Indiana, Inc.,
303 *East Berry St.,*
Fort Wayne, Ind.

TO THE EDITOR: — "We read with considerable interest your article 'A Business Office Training Program' in the June 1 issue of *Telephone Engineer and Management.* As we ourselves are currently planning a similar 'Business Office Sales Program,' your article was both timely and informative.

"We would greatly appreciate any assistance you could give us in obtaining the Service Sales Packet, as well as copies of the address 'What Is Sales?' by Mr. W. F. Stewart, the skit 'What Not To Do,' the address 'Service Consciousness' by Mr. V. Rust, and the skit 'What To Do.' In addition any information regarding the agenda of the program would be of considerable interest to us."

G. W. O'Blenis,
General Commercial Manager,
New Brunswick Telephone Co., Ltd.,
St. John, N. B., Canada.

TO THE EDITOR: — "I read Mr. Stacey's 'Commercial Dept. Notes' in the July 1 issue and found it interesting and informative. Would you please advise me where and how we can obtain the training film entitled 'Four Steps To Sales' which he mentioned in the article. Thank you very much."

O. W. Scott,
BEK Tel. Mutual Aid Corp.,
Steele, N. D.

Thanks to all of you! We understand Allan Stacey has taken good care of your requests. Let us know how the plans work for you. Your experience may help others. — Editor

* * *

"That Hoffa Threat"

TO THE EDITOR: — "I am *very* much interested in your article in the July 1 issue re '*About That Hoffa Threat.*' It is very timely and portrays just about what we are coming to and what might be done by the 'public.'

"However, there is one thing I am not sure of in this country, i.e., while the British public responded nobly to the threat to their very existence, will the apathetic American public get off their fannies, or just take the licking which sometimes I think they have coming to them?

"And secondly, while the British are more inclined to obey law and order, what of the radical labor people over here? Won't they literally *club* and *use violence* and won't the Government authorities, both national and local, refuse to take the side of the public even in a calamity case like this?

"It seems to me that something should be started *right now* to make it *very clear* to the people of Hoffa's stripe that when they go too far the public will really arise and take charge and that officialdom will be on the public side. You very well know that unless something like this is started soon, the radicals of labor will beat up the citizens and cripple trucks and put sugar in the gasoline tanks, etc.

"Can you suggest some practical ways to actually start some program of this nature so that the radicals in labor will think twice before they get too deep into this?"

Harry G. Burd,
169 *W. Ramona Ave.,*
San Clemente, Calif.

We're working on it and we have a few answers. But let's hear from some more TE&M readers. Perhaps some reader has a practical method right now. — Editor.

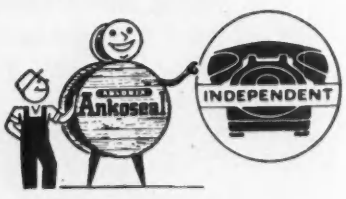
"Letters From Readers" has been created to serve as a clearing house for ideas, comments and suggestions that will be helpful to all members of the telephone industry. Address "Letters," care of TE&M, 7720 Sheridan Rd., Chicago 26, Ill.

ALPETH* CABLES

...of course ANSONIA **Ankoseal** *makes*

...prompt delivery too!

- **Low Shield Resistance**
- **All Pairs Guaranteed**
- **Fully Color Coded**
- **REA Approved**

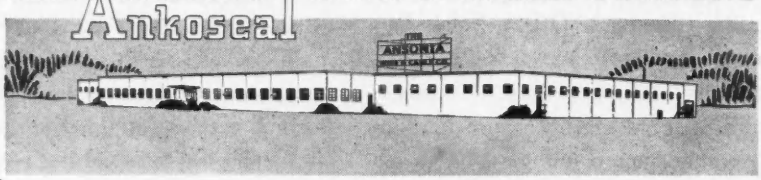


Ask for
New Telephone
Product Literature
Just Published

You can depend on Ansonia Ankoseal for Alpeth Cables made under rigid quality controls.

Ansonia Ankoseal Alpeth Cable is made in conformance with the latest REA specifications.

THE ANSONIA WIRE & CABLE COMPANY



111 MARTIN STREET, ASHTON 3, RHODE ISLAND

"Leadership In Plastic Cables Through Quality and Service"

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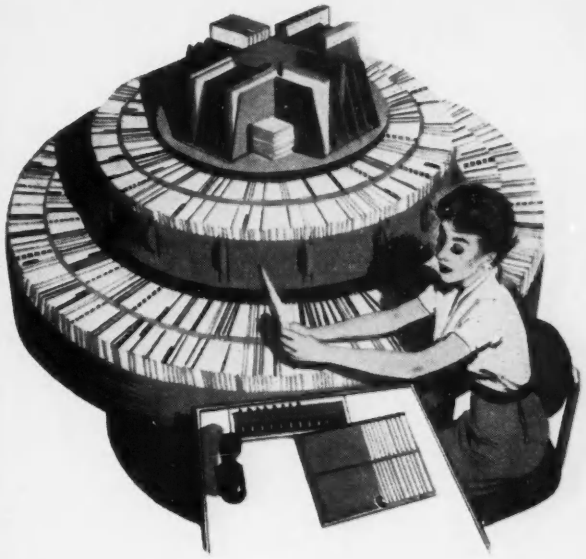
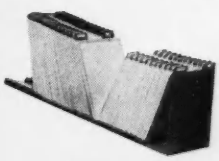
50% MORE OUTPUT WHEN SHE STAYS PUT



NEW ACME VISIBLE ROTARY brings line or trouble card data to users with pushbutton speed!

Without moving from their desks around a smartly modern Acme Visible Rotary, 1, 6, 12 or more users have instant access to as many as 250,000 records. No more waste steps between desks and files. No more reaching or stretching. Per hour output goes up, fatigue errors go sharply down. Send coupon for details on power and manual Rotaries, designed to telephone specifications by Acme Visible engineers working closely with telephone operations experts.



V-ANGLE LINE CARD TRAY. Usable from either end. Flips open at any card, and stays open with supported V-Angle, leaving both hands free. Measured space control keeps space ready for refiling when card is removed or changed.

ADJUSTABLE PARTITIONS IN LINE CARD TUBS are moveable. In event size of your line records is changed in the future, partitioning is easily shifted to fit your new requirements.

ACME VISIBLE

World's Largest Exclusive Makers of Visible Record Systems

ACME VISIBLE RECORDS, Inc. 4111 West Allview Dr., Crozet, Va.

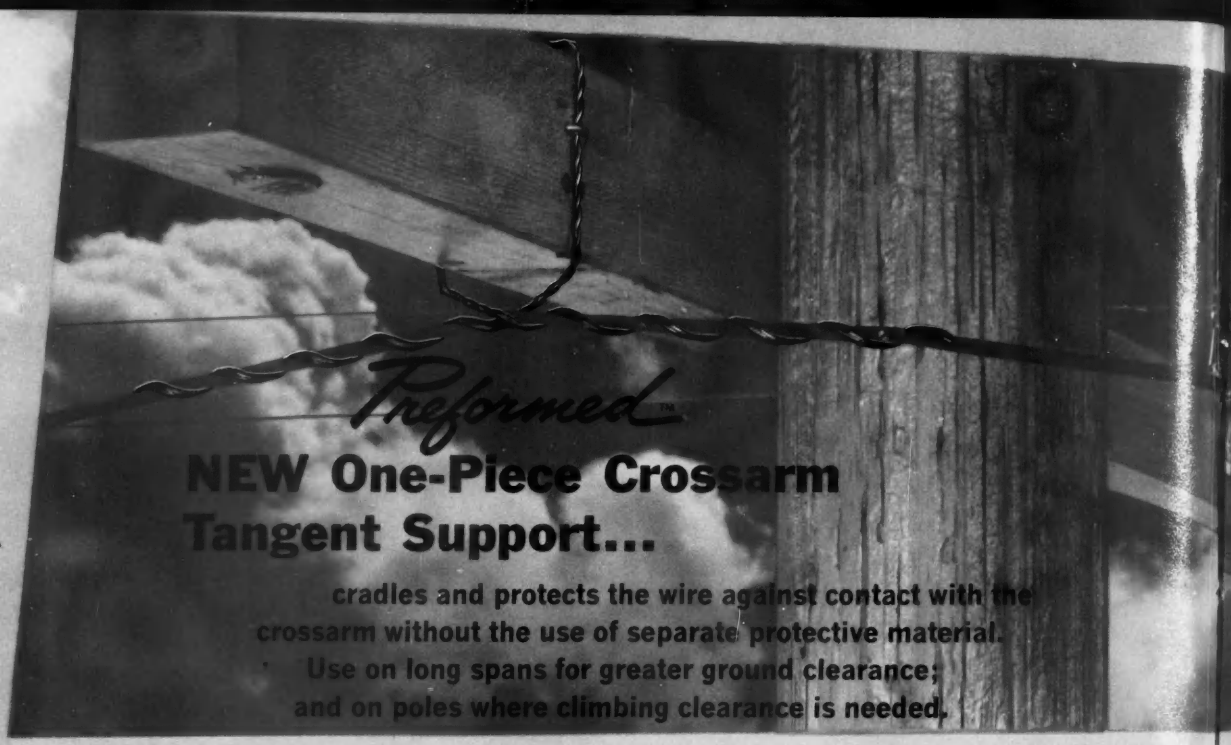
Without cost or obligation, please send more information about your new equipment and systems for handling phone records. And let me have the address of the nearest representative in your nationwide sales and service organization.

We have_____ line cards and _____ cable and terminal records to handle.

Name_____ Title_____

Company_____

Address_____ City_____ Zone____ State_____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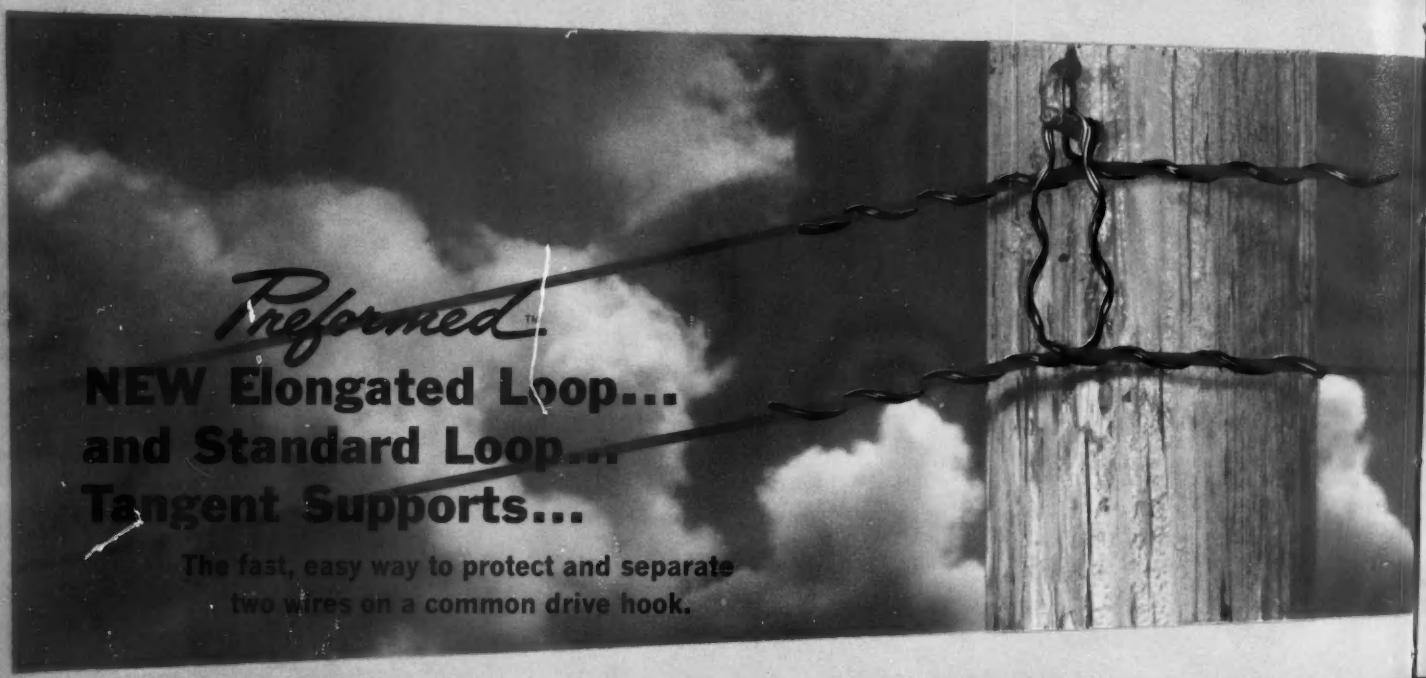
NEW One-Piece Crossarm
Tangent Support...
cradles and protects the wire against contact with the
crossarm without the use of separate protective material.
Use on long spans for greater ground clearance;
and on poles where climbing clearance is needed.


Preformed™
NEW Elongated Loop...
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The fast, easy way to protect and separate
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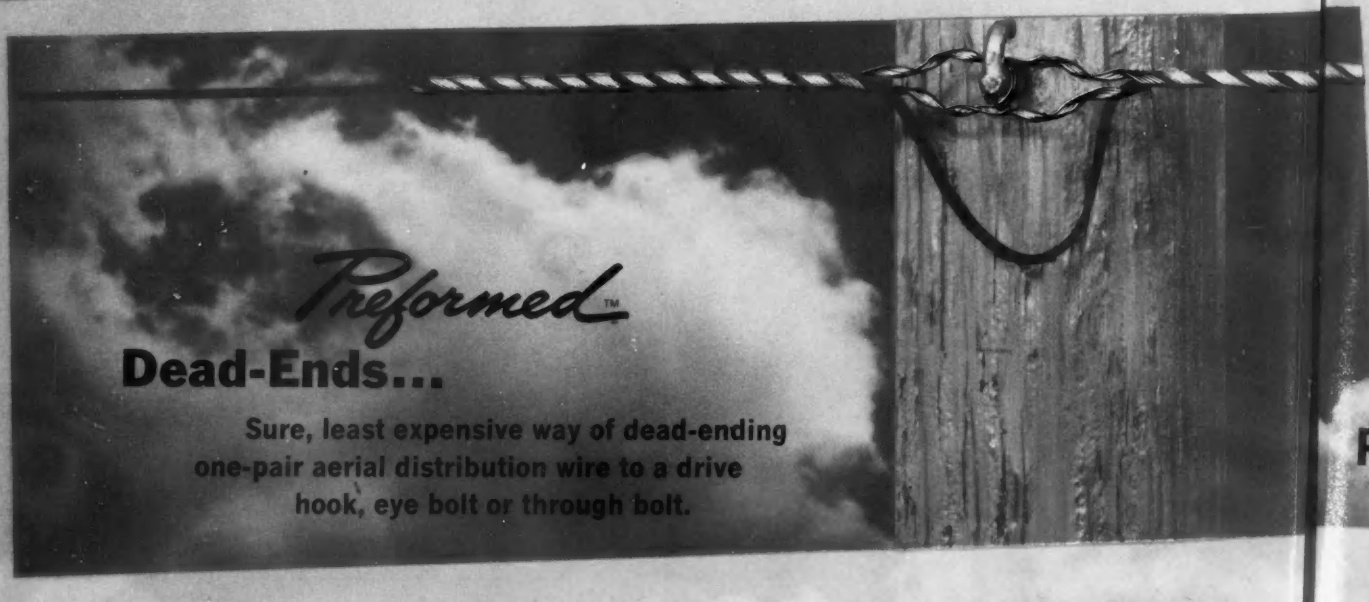
Preformed™
Dead-Ends...
Sure, least expensive way of dead-ending
one-pair aerial distribution wire to a drive
hook, eye bolt or through bolt.

For the SAFEST FASTEST SUSPENSION of One-Pair Aerial Distribution Wire (C-Rural)

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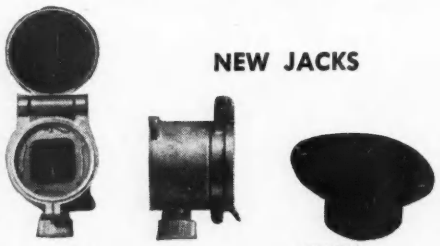
SUPPLY LINES

SUTTLE — Suppliers of Equipment to Telephone Men — Since 1910

KUNZ LINEMEN'S GLOVES AND PROTECTORS

Designed for protection, comfort, and service — KUNZ Gloves and Protectors feature highest quality workmanship and materials. Among linemen "best sellers" are KUNZ style 150-X-Heavy Buckskin and style 80-Goatskin, 4½" gauntlet linemen's gloves. Style 1005-goatskin and 1003-horsehide are specially designed curved hand rubber glove protectors — soft, pliable, and excellent wearing. For quality and wear, order KUNZ gloves from SUTTLE.

NEW JACKS



SE16151

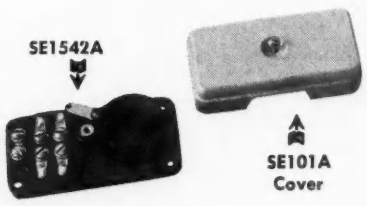
OUTDOOR

The new outdoor, weatherproof SE-16151 jack from SUTTLE is ideal for outdoor telephone service. The non-corrosive, waterproof aluminum receptacle houses the SE493A jack (above). This new jack makes an excellent extension sale-revenue booster. Order from SUTTLE.

SE493A

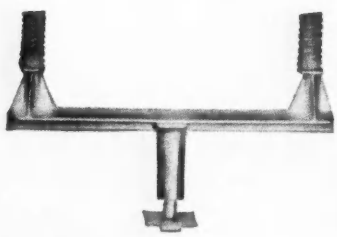
INDOOR

In brown or ivory plastic, the SE-493A jack can be flush mounted directly in molding or wall. Four (4) spring tensioned jack holes accept standard SE283B 4-prong plug. No conduit box necessary. SE493A, $1.30 each. Can be used with SE-19B plate, $.30 each. Specify brown or ivory.



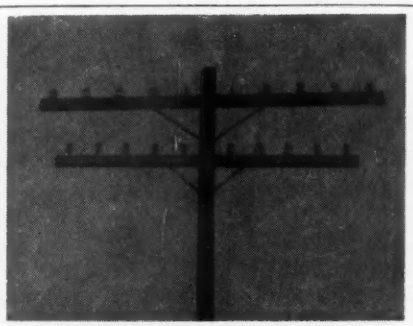
ELIMINATE INDUCED RADIO NOISE!

A new W.E. equivalent product, the SE1542A Inductor is a combination 4 terminal block and choke coil which completely eliminates induced radio noise at subscriber locations. Every operating company will need several of these new SUTTLE units. Unit uses SE101A plastic cover. Write or call SUTTLE or your local distributor for literature and prices.



NEW ALUMINUM TRANSPOSITION BRACKETS

The PERMANENT MOLD FOUNDRY aluminum transposition brackets help eliminate frequent replacements. Made of a new aluminum alloy, they are completely assembled and ready to install in crossarm, thus saving the additional cost of assembly. Send your orders today to SUTTLE, or your local distributor.



FAST DELIVERY ON CROSSARMS

SUTTLE speeds crossarm delivery by using any one of six shipping points. Manufactured by AMERICAN CROSSARM to meet full NELA and REA specifications. Arms available in clear grades of Douglas fir, yellow pine and cypress. Regular telephone pony-size arms are stocked in 4, 6, 8, and 10-pin sizes, as well as 10-pin arm drilled for 10 insulated fork Brackets. For prompt delivery, order from SUTTLE.

NEW COOK LOADING COIL CASE

All packaged in one compact unit for easy installation and accessibility. COOK loading Coils reduce attenuation, combat frequency distortion and avoid cross talk on existing lines. 3C protection blocks assure moisture proof termination. The COOK Coil Case is made in 6, 11, and 16 pair and the loading coils have a nominal inductance of 88MH. For prompt delivery, order from SUTTLE.

Manufacturers, suppliers, and printers to Telephone Men — Since 1910

For further information, specifications or quotations on these telephone supplies— write, wire or telephone—

SUTTLE EQUIPMENT CORPORATION

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Phone: Lawrenceville 782

135 S. La Salle St., Chicago 3, Illinois
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Rural Telephone Lines

TALK BETTER LAST LONGER

with low-cost

Copperweld® O-Eighty-Thirty

TELEPHONE LINE WIRE

The superior voice transmission of O-Eighty-Thirty Telephone Line Wire makes friends and builds good will every time a subscriber picks up his phone. And this low-cost line wire continues to provide the same excellent talking qualities even after many years of service. There's no building-up of noise level and weakening of signals due to rust, because O-Eighty-Thirty is completely non-rusting.

You save money, too. The initial cost is practically the same as ordinary wire. And its extra high strength permits economical long-span construction on both voice and carrier circuits. O-Eighty-Thirty is easy to install, due to its light weight—which also saves on shipping and handling costs.

In short, you can provide high-grade service at low cost for your subscriber loops and secondary toll lines by stringing O-Eighty-Thirty Line Wire. And you'll be building for long, trouble-free life.

Write us today for prices, sag data and staking tables.

COPPERWELD STEEL COMPANY

WIRE AND CABLE DIVISION *Glassport, Pa.*

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

SOLD BY LEADING DISTRIBUTORS

See how Leich's L
Cuts Outside Plant C

In growing areas, the cost of providing telephone service is becoming more and more expensive. Leich's Line Concentrator provides many ways to economically solve this problem. It lets you add telephones in an area without installing additional outside plant.

By distributing a number of subscriber lines over a few trunks to the central office, it greatly reduces outside plant costs. It uses the same principle that is the basis of all central office layout; among a large group of subscribers, only a few will require telephone service at the same time.

A concentrator installation consists of two units—an exchange unit and a remote subscriber unit. No power is required at the remote distribution point. No modifications are necessary in the central office switching equipment, which can be either manual or dial.

Here's a Typical Problem

Seventy stations are served by a 25 pair cable into an area, and no spare facilities are available. You are faced with a demand for upgraded service by most of the seventy subscribers. What's more, a new housing development will soon require an additional 12 lines.

To furnish the desired service, you would normally add 25 cable pairs. In this case, it would mean replacing 3200 feet of 26 pair cable with 51 pair at a cost of $2,200. An additional $6,800 would have to be spent on feeder cables. Your total costs would be approximately $9,000.

LEICH

Subsidiary of
GENERAL TELEPHONE & ELECTRONIC

Line Concentrator

Costs in Growing Areas

Leich's Line Concentrator Cuts Costs 50%

Since Leich's Line Concentrator lets you "concentrate" the calling load of a large group of lines onto a few cable pairs, it would *not* be necessary to add the new and larger cable facilities. For example, Leich's 49-9-2AZ Concentrator uses only eleven cable pairs for 9 traffic trunks (with 2 pairs for control purposes) to serve 49 subscriber lines. Any 11 of the cable pairs may be used for the concentrator trunks and control leads, and the subscriber lines formerly served thereon shifted to concentrator lines. For maximum effectiveness, lines on which the traffic is light are best suited for concentrator assignments. You would then be able to upgrade existing service, furnish the 12 lines to the new housing development, and be able to absorb some future growth without addition of cable.

The 49-9-2AZ Line Concentrator, including the All Trunks Busy option and weather-proof cabinet for mounting the subscriber end unit costs you only $4,205 plus your installation costs. Since the conventional cable relief job would cost $9,000, your expense is halved.

Prompt Delivery From Stock on Two Models

Two basic sizes of the Leich Line Concentrator are available from stock. They can be shipped within 30 days from receipt of order.

The 49-9-2AZ, is equipped with 49 lines and 9 traffic trunks and 2 control trunks. The 49-18-3AZ is equipped with 49 lines, 18 traffic trunks, and needs three pairs for control purposes. The latter unit will accommodate a higher calling rate.

There are so many different ways you can use the Line Concentrator to save on plant costs, to upgrade service or to add customers. A Leich sales engineer is available—no obligation—to tell you the whole story. Write today.

EICH SALES CORPORATION • 427 WEST RANDOLPH STREET • CHICAGO 6, ILLINOIS
CIFIC COAST: 11401 W. PICO BLVD., LOS ANGELES 64, CAL.
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EAST: 3651 CONNECTICUT AVENUE, YOUNGSTOWN, OHIO
SOUTHEAST: 5126 SOUTH LOIS ST., TAMPA 11, FLORIDA

anufacturers of telephones, switchboards and related apparatus since 1907

RAYTHEON's 200-AMP BATTERY CHARGER is just one of the new Rectichargers introduced at the 1959 U. S. I. T. A. convention in Chicago. If you did not pick up the facts at the show, you can get them by writing, Raytheon, Manchester, N. H.

POWER SUPPLIES FO

PBX · PABX · MANUAL · STEP-BY-STEP · X-BA TOM

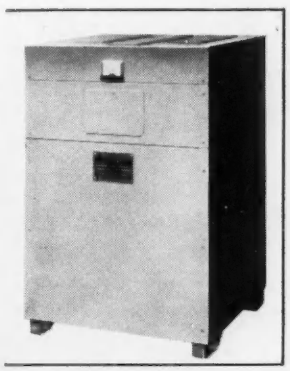
.....in the power field with new equipment

CHICAGO, 1959 – Raytheon answers the power supply needs of a rapidly growing telephone industry by expanding its 50- and 130-volt battery charger lines.

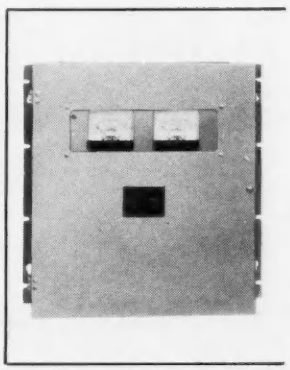
This new power equipment utilizes Raytheon-developed and thoroughly tested silicon-rectifier circuitry that offers greater reliability with less maintenance.

These new, highly efficient Rectichargers are up to 50% smaller than comparable selenium models – saving valuable floor and rack space.

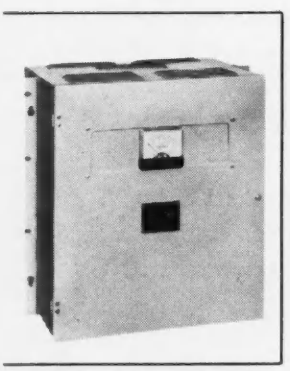
For literature on these new units or for help with any of your battery charger or battery eliminator requirements, simply write Raytheon Company, Manchester, New Hampshire.



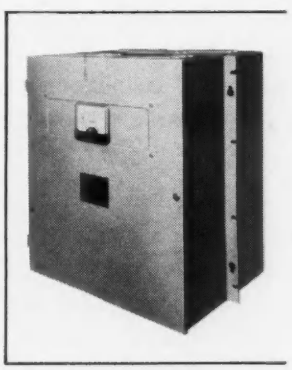
RC-50K200: 200-ampere, silicon battery charger is added to Raytheon's 50-volt Recticharger line. This unit is 46 inches high by 30 inches wide by 29 inches deep—less than half the size of its selenium counterpart.



RC-140A3: This new 3-ampere, 66-cell charger was designed for 130-140 volt power-board applications. Companion 6- and 12-ampere units, silicon CEMF cells and control panels give Raytheon a complete power panel line.



RC-50A9: This new 9-ampere rating provides reserve capacity for growing exchanges. RC-50A9 adapts to 19, 23 or 30-inch mounting and occupies only 15 inches of vertical rack space.



RC-50A18: Another intermediate charger rating to meet a recognized power requirement for large PBX's and medium-sized CDO's. This 18-ampere silicon charger is only 20 inches high.

RAYTHEON COMPANY
Industrial Apparatus Division

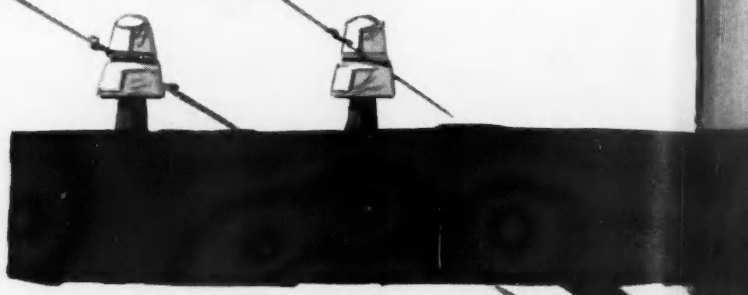
RAYTHEON *Excellence in Electronics*

ES FOR THE TELEPHONE INDUSTRY

K-BA TOMATIC TOLL-TICKETING · ELECTRONIC SWITCHING · CARRIER · MICROWAVE

AE-Lenkurt

HAS **EVERYTHING** YOU NEED FOR PROFITABLE CIRCUIT EXPANSION



LENKURT SHORT-HAUL CARRIER, for instance . . .

Lenkurt's Type 45C family of open-wire carrier systems offers an inexpensive way of expanding circuit groups beyond the capacity of low-frequency carrier.

Types 45CA, CB, CC and CD provide four 4-channel allocations in the frequency range of 2 kc. to 156 kc., with all the advantages of Type 45 equipment for large circuit groups. In addition, the Type 45C terminals provide direct interconnection at carrier frequencies with all other 45-class systems for open-wire, cable or radio, and coordinate with W. E. Type O carrier.

Type 45C systems are transistorized, require a minimum of space, and employ interchangeable plug-in channel units. And each channel has its own compandor and regulator.

The AE-Lenkurt team of *telephone* engineers will handle as much of the planning and installation as you wish. And AE will provide "follow-thru" service *for the life of the equipment.*

For full information on the Lenkurt Type 45C systems or companion equipment, call your Automatic Electric representative, or fill in and mail coupon today.

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Subsidiary of

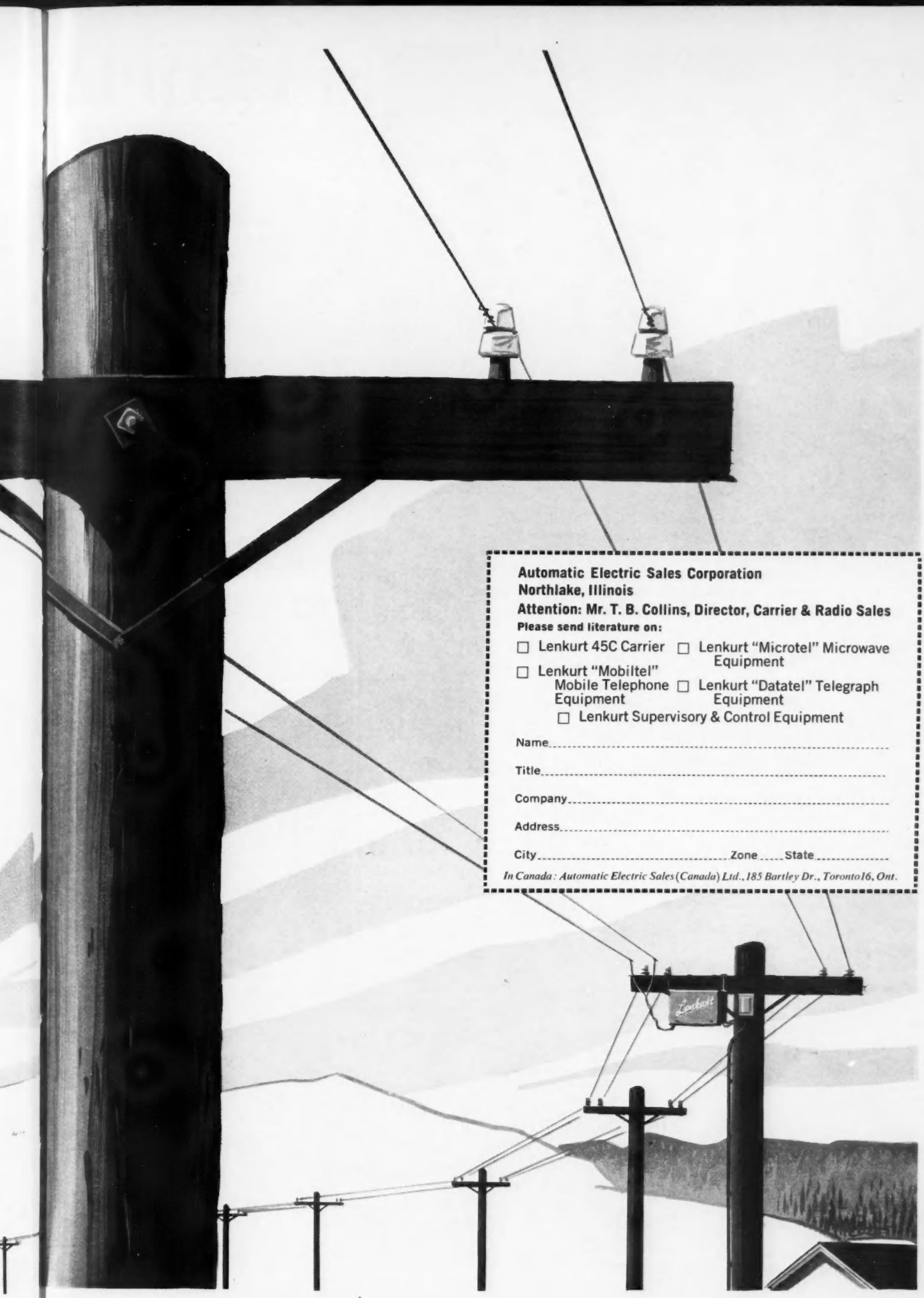
GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM

ALL YOUR COMMUNICATIONS NEEDS

FROM ONE

DEPENDABLE SOURCE



Automatic Electric Sales Corporation
Northlake, Illinois
Attention: Mr. T. B. Collins, Director, Carrier & Radio Sales

Please send literature on:

- ☐ Lenkurt 45C Carrier
- ☐ Lenkurt "Microtel" Microwave Equipment
- ☐ Lenkurt "Mobiltel" Mobile Telephone Equipment
- ☐ Lenkurt "Datatel" Telegraph Equipment
- ☐ Lenkurt Supervisory & Control Equipment

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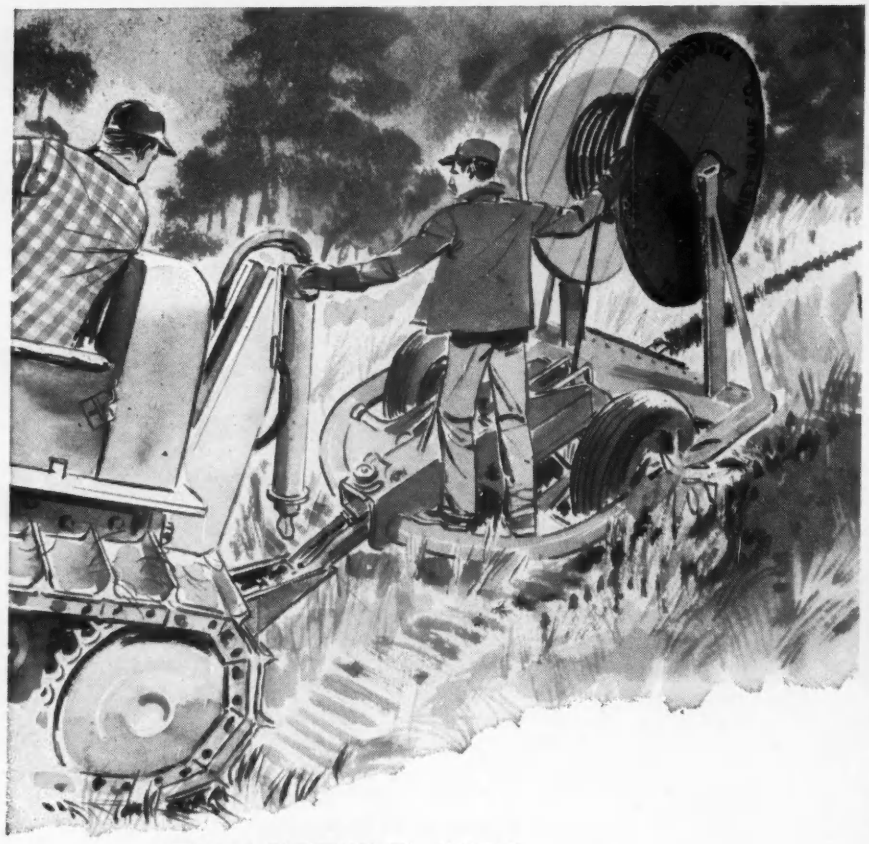
In Canada: Automatic Electric Sales (Canada) Ltd., 185 Bartley Dr., Toronto 16, Ont.

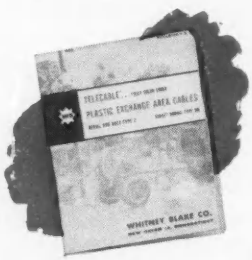


BURY IT
FORGET IT

Whitney Blake TELECABLE for Direct Burial, is made to last, to withstand the most "unfriendly" soil conditions and to give long, uninterrupted service underground.

It is quality that makes for true economy . . . that's why we can say "bury it and forget it."

WB TELECABLE — Type DB
Complies with REA
Specifications PE-23



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free Bulletin T-5

WB WHITNEY BLAKE CO.

Telephone CHestnut 8-5515
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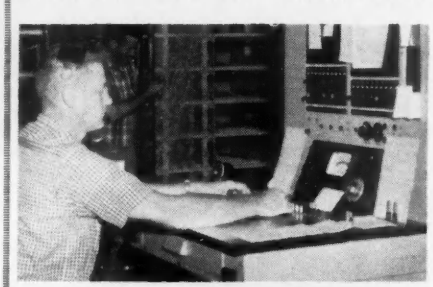
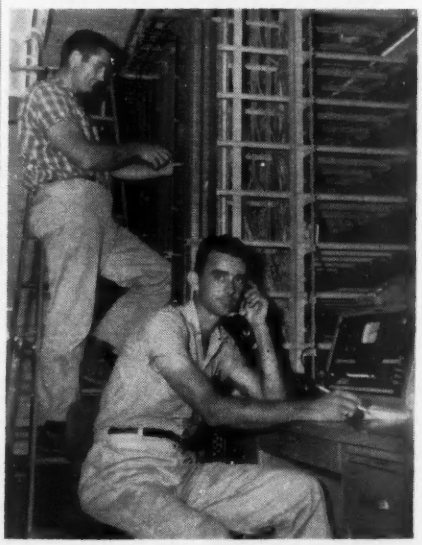
NEW HAVEN 14, CONNECTICUT

PEOPLE

Supporting Cast Seldom Gets Name In Lights

BACK OF every successful operation, and seldom seen or recognized by the public, are the C. O. Maintenance men . . . adding stations, making number changes, routining, occasionally shooting trouble. The photos below take us behind the scenes in





two typical exchanges recently cut over to modern dial operation: the Fayette exchange of the Alabama Telephone Co., and the main office of the Canton (Ga.) Telephone Co.

In the top photo *H. J. Howard*, local manager at Fayette Ala., is seated at turret type wire chief's desk, and *Everett Hocutt*, installer, has just completed an addition at the MDF.

Bottom photo shows *Robert Boettger*, plant superintendent for Canton, Georgia, using a larger console type test board for routining. He is assisted by *Jack Payne*, central office maintenance man.

IN THE INDUSTRY

"Must be Noon in Commerce, Georgia"

Part of plant crew at Commerce, Georgia. Note that the truck monogram spells out this company's Independent status.

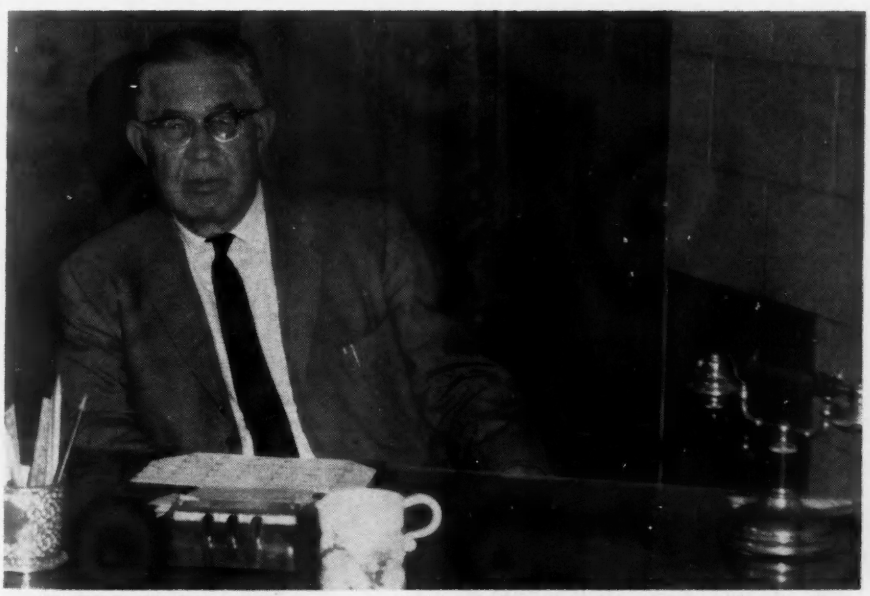
IT ISN'T often that you find even one truck parked behind home base at Commerce, Ga. The Commerce Telephone Co. — already at the 4,000 mark — is growing at the rate of 350 per year, and presently working on improved service for two additional exchanges. *W. L. New* is president; *W. L. New, Jr.*, vice president; *W. Hardman Jones*, manager; *F. E. Fullerton*, plant superintendent. All five present exchanges have been completely rebuilt since Mr. New acquired the property 10 years ago, making it one of the most modern in the state.

W. L. NEW, president of the Commerce (Ga.) Telephone Co.; MRS. NEW and GRANT NEW.

Busy Manager Keeps Sense of Humor

"AS FAST as we order new instruments, my customers want them. Some day maybe I can keep one for myself!"

Thus quips *George Beckwith*, manager of the Au Sable Valley Telephone Co. at Keeseville, N. Y. The ancient telephone, still working nicely, always makes a good conversation piece — especially if a customer, having recently received a new black instrument, suddenly wants it changed for blue . . . or ivory . . . or what are some of those other pretty colors?



GEORGE BECKWITH, mgr., Au Sable Valley Tel. Co., Keeseville, N. Y.

The Au Sable company has completed a good portion of its dial modernization program; has plans formulated for another dial office and toll center as soon as details can be worked out with the connecting company.

Long a vacationist's mecca, this area combining lake and mountain charm is now spreading the tourist business out over the full year with the newly-opened ski developments on Whiteface and other challenging Adirondack slopes.

And just in case you alert telephone men are wondering how George Beckwith uses his ancient telephone with a dial office, there's more to this arrangement than appears on top of the desk!

Doyle J. Dameron

LAST MONTH a former editor of "California General News," *Doyle J. Dameron*, moved from his post as employe communications coordinator for General Tel. Co. of California, Santa Monica, to New York City as employe communications supervisor for General Telephone & Electronics Corp., responsible for coordinating the over-all employe communications activity throughout the GT&E organization.

Previously employed by North American Aviation, Los Angeles, Dameron joined General of California in 1956. He worked in the commercial and traffic departments before becoming editor of "California General News" in 1957.

"Wonderful To Talk With You"

CLICHE? . . . Not for *William E. "Buddy" Hardee* of Laurel Hill, N. C. The essence of sincerity became

Dependable Power

for Years-
and Years-
and Years-
of Service!

Schauer
ELECTROX
BATTERY ELIMINATORS
BATTERY CHARGERS

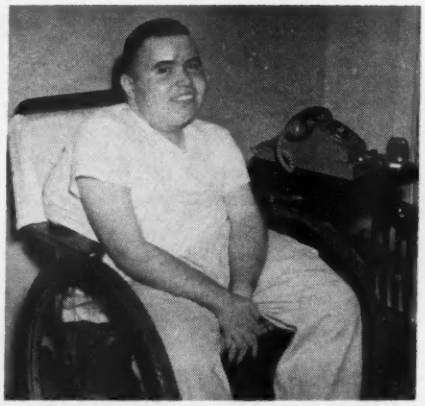
In sizes and capacities to meet every telephone power requirement.

See your Schauer Jobber.
Write for Bulletin 4516.

RECTIFIER DIVISION
SCHAUER
MANUFACTURING CORP.
4516 Alpine Ave.,
CINCINNATI 42, OHIO

articulate in his few simple words — the beginning of a wonderful new experience in a life that had been cruelly circumscribed.

An early victim of muscular dystrophy, Buddy's day for most of his



"Buddy" Hardee of Laurel Hill, N. C.

24 years has been limited to his wheel chair. He is fully alive to the world outside; it comes *in* to him through books, through television, and especially as friends drop in to call, or the postman stops with letters. This is fine — but it's all one way.

L. E. Dunn, manager of the Laurel Hill Telephone Co., knew Buddy . . . knew he longed to be able to *go to* people, not be dependent on their coming to him. Now a telephone man naturally thinks first of materials he works with every day. But Buddy had difficulty with a regular instrument. This was mentioned to Bob Lake, a salesman for Stromberg-Carlson. The photograph shows the happy solution: Hands Free Telephone.

Now the door is open for Buddy Hardee — he can go out to meet his friends. And each time he makes a call you can know how truly he means it when he says "Wonderful to talk to you."

Editor's Note — If you live near Laurel Hill, give Buddy a call sometime. You'll be glad you did.

Alarm System Locates Trouble By Tones

THE CONSOLIDATED Telephone Co. of Florence, Kentucky, recently developed its own version of an Alarm System that is somewhat unique and very efficient.

The company has several exchanges in addition to the main office at Florence; all are experiencing rapid expansion. During normal working hours an alarm from any of the satellite exchanges appears on a separate

ROY BROOKS, plant superintendent of the Consolidated Telephone Co., Florence, Ky., keeps on top of a tremendous expansion program.

lamp at the Wire Chief's turret in Florence. At night an alarm condition is registered at the home of the manager or other designated person. He then — and this is ingenious — dials a connector terminal in Florence which returns a distinctive tone to show *which* exchange has an alarm condition.

After it is determined which office has the alarm condition, the alarm-checking terminal in the affected office is dialed and the terminal will return a distinctive tone indicating the nature of the alarm.

This is just one example of the type of approach taken by this progressive company to improve efficiency during a growth period. *Garland B. Foscue, Jr.*, is manager of the Consolidated Telephone Co.; *Roy Brooks* is plant superintendent. Area served — just across the river from Cincinnati — is the fastest growing in the state.

What's Your Story?

TE&M's new department — "People In The Industry" — has been created to keep you posted on activities of the telephone industry's men and women. To keep it going we need your stories and pictures. Send all material to: Editor, TE&M, 7720 Sheridan Rd., Chicago 26, Ill.

an addition to our line
...the RIGHT GUARD for your line!

PUREGAS
MODEL 1500

BLOCK MOISTURE INTERFERENCE

The new PUREGAS 'forward' look includes three new models designed to service all operations from the smallest installation to the very largest system.

With the new No. 750 - 1500 and 5000 models, PUREGAS equipment can now be progressively planned into any size improvement budget. Naturally, wherever PUREGAS goes to work guarding and protecting cables from moisture; service improves, maintenance costs decline and greater profits are reflected.

PUREGAS equipment is self liquidating since it pays for itself in labor savings, reduced cable replacement and greater overall operational efficiency.

If your goal is better service with reduced maintenance costs you should start your planned PUREGAS pressurizing program now.

Send for Bulletin 110 on gas pressurizing and specification sheets on the above units.

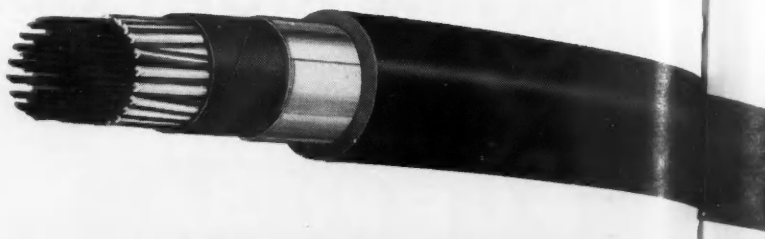
OTHER MODELS IN THE PUREGAS LINE

MODEL 5000

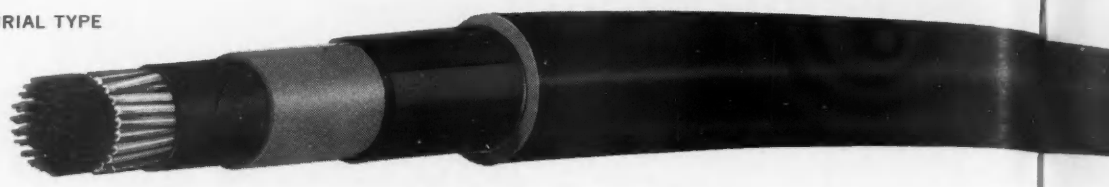
MODEL 750

PUREGAS EQUIPMENT CORP.
578 OAK STREET
COPIAGUE, L. I., N. Y.

AERIAL AND DUCT TYPE



DIRECT BURIAL TYPE



PHELPS DODGE TELEPHONE WIRE AN
THE "MINE-TO-MARKET" QUALITY LIN

Exchange Area Telephone Cable

This Phelps Dodge cable, designed for aerial, duct and direct burial use, has a lightweight, thermoplastic construction—including fully color coded conductors—that makes handling easier and cuts installation time.

Exceptionally fine electrical properties and superior resistance to moisture, weathering and abrasion are assured through the use of highest grade materials, skilled workmanship and manufacturing experience.

The controlled craftsmanship and high quality of Exchange Area Telephone Cable are typical of the entire line of Phelps Dodge telephone wires and cables including:

- Self-Supporting Telephone Cable
- Rural and Urban Distribution Telephone Wire
- Interior Telephone Cable
- Rubber-Insulated Lead-Sheathed Telephone Cable
- Paper-Insulated Lead-Sheathed Telephone Cable
- PD-Tel Wire

REAND CABLE

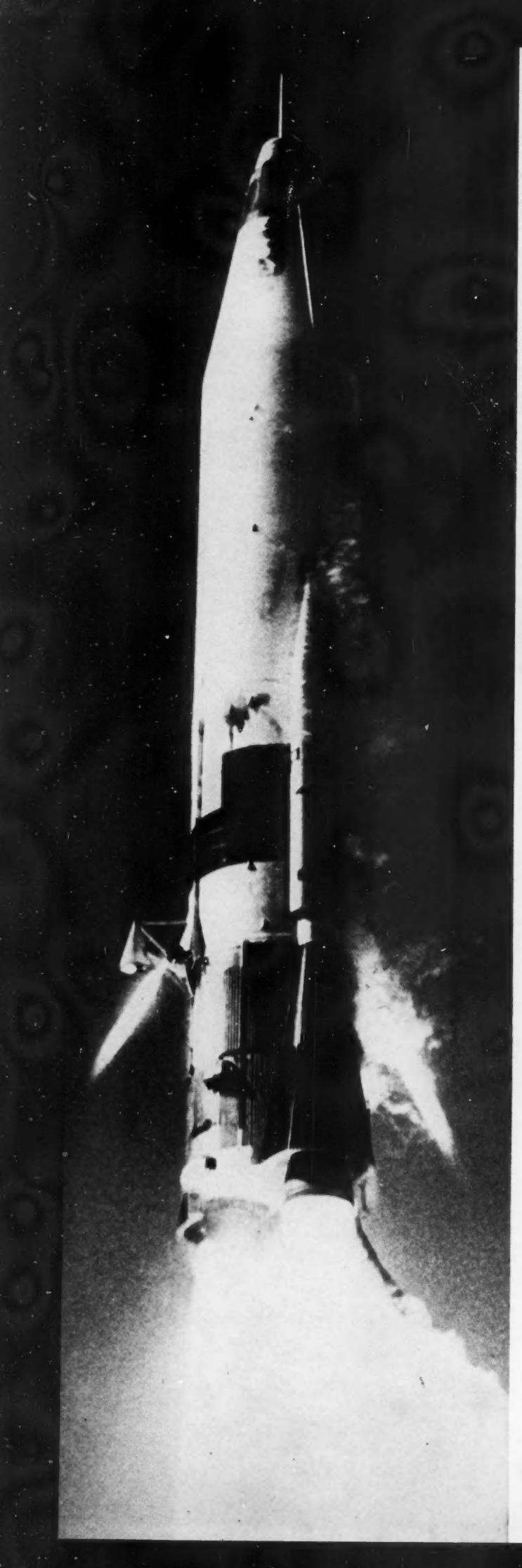
TYLINE!

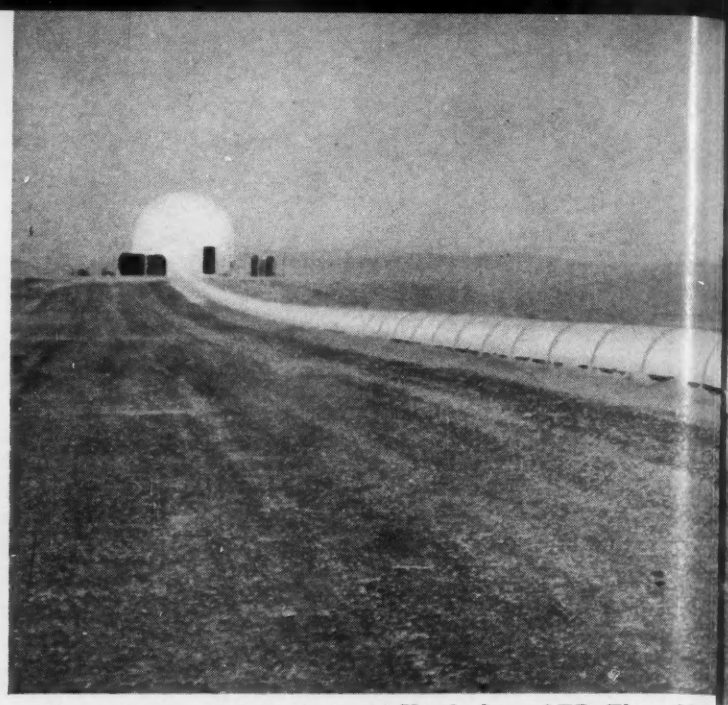
PHELPS DODGE COPPER PRODUCTS

CORPORATION

SALES OFFICES: Atlanta, Birmingham, Ala., Cambridge, Mass., Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Dayton, Denver, Detroit, Fort Wayne, Greensboro, N.C., Houston, Indianapolis, Jacksonville, Kansas City, Mo., Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, N. Y., San Francisco, St. Louis, Seattle, Washington, D. C.

PD





Waveguide and antenna shelter at Vandenberg AFB. The cable

COUNTDOWN.

Whenever an Atlas or Titan missile blasts off, Kellogg communications control and coordinate those all-important countdowns. All ground communications before, during and after a launching of these giant ICBMs takes place through Kellogg installations.

At Vandenberg Air Force Base, the U.S. missile training center, Kellogg has designed and engineered dramatic new apparatus and installed multi-thousands feet of cable as well as switching equipment that control the complex communications essential to successful missile launchings. Kellogg is associate contractor for Atlas and Titan missiles, a supplier for BOMARC, and a major participant in SAGE, making it possible for independent telephone companies to support and supplement the continental air defense system.

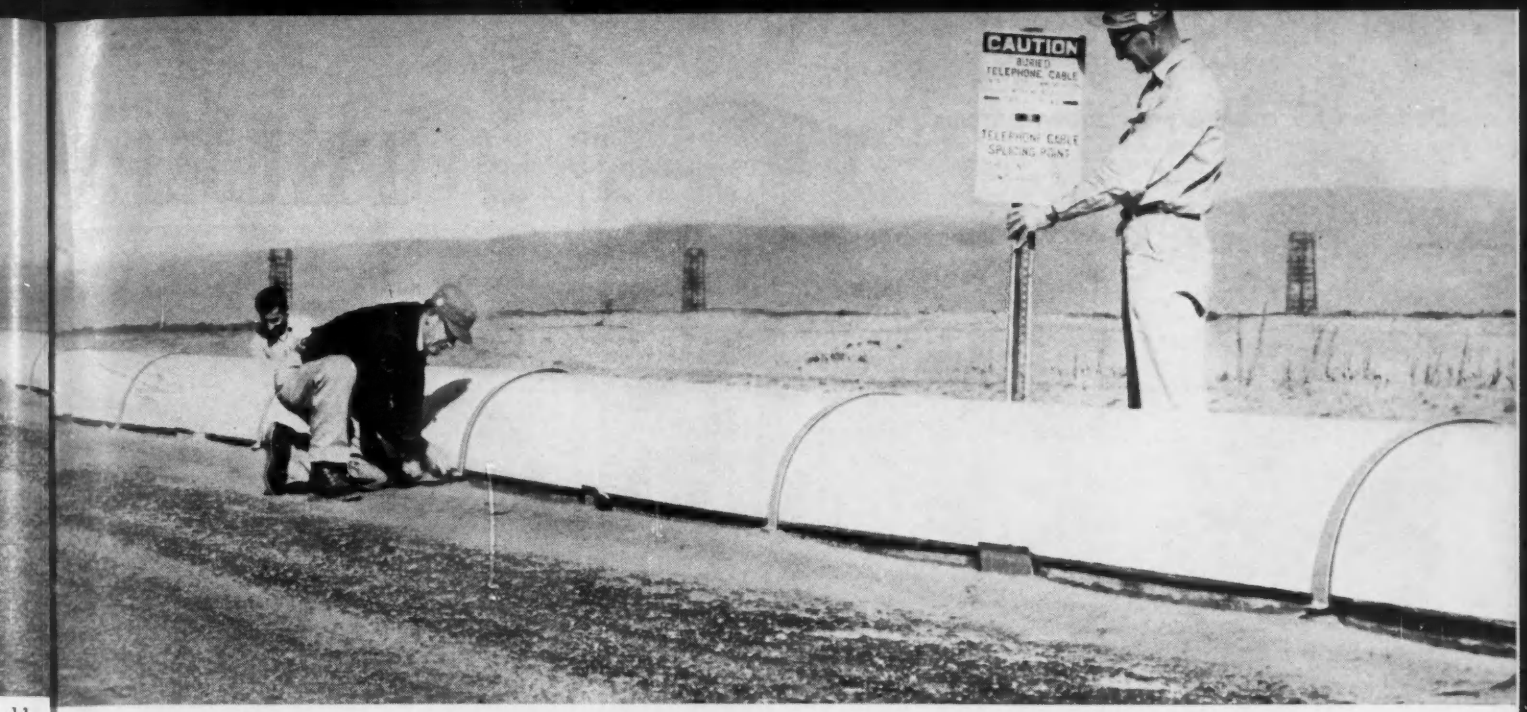
And Kellogg's ingenuity and experience has developed new and better systems and devices for defense communications. This same skill is constantly working to improve the services offered by independent telephony which Kellogg has been serving for more than 60 years.

Whenever you have a communications problem or need, call your Kellogg representative.

KELLOGG
CHICAGO, ILLINOIS
Communications Division of
IT&T

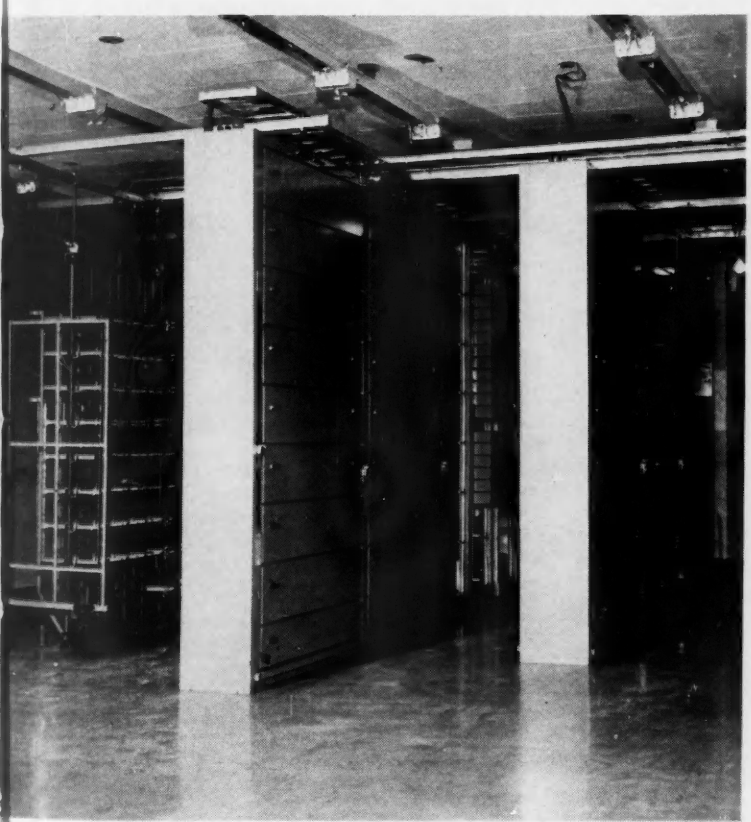
Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue
Chicago 38, Ill. Communications division of
International Telephone and Telegraph Corporation.

Atlas ICBM shortly after take-off.

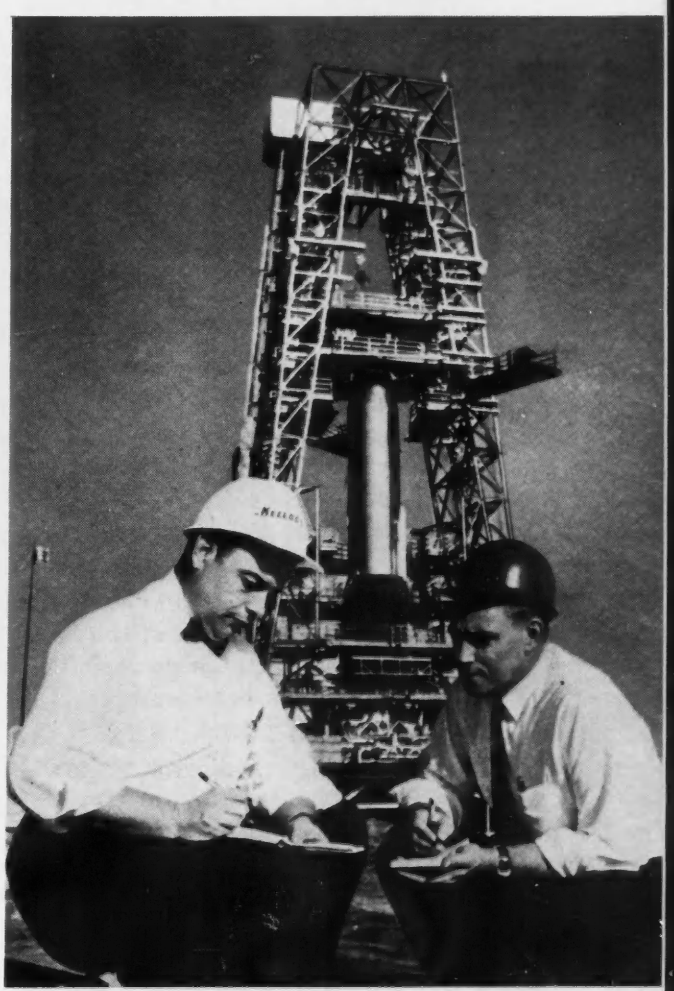


nside the waveguide forms part of Kellogg's vast communications system at America's only missile training center.

N..and count on Kellogg!



K-60 Crossbar was selected by the Air Force Ballistics Missiles Division to insure reliability of weapon system communication.



Kellogg engineers at Vandenberg confer in the shadow of an Atlas launching pad.

Regional Offices and Warehouses:

CALIFORNIA: 23 Broderick Road, Burlingame, Calif., OXford 7-5780.
GEORGIA: 1594 Southland Circle, N. W., Atlanta, Ga., SYcamore 4-2441.
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NEW YORK: 327 North West Street, Syracuse, N. Y., HArrison 2-9251.
TEXAS: 1515 Turtle Creek Blvd., Dallas 7, Texas, RIverside 7-5191.
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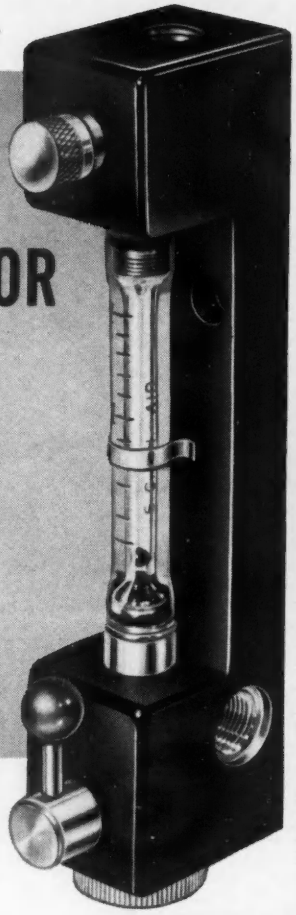
Designed for cable pressurization systems—*

FISCHER & PORTER

AIR RATE INDICATOR

- permits a fast change in flow rate
- offers greater visibility—no parallax
- costs less



MODEL 10A1125

**Refer to Description Number AT7843X for complete specifications.*

The Fischer & Porter Air Rate Indicator is designed to continuously monitor the rate of air flow to the pressurized cable and to indicate the presence of cable sheath breaks. Approved by Bell Laboratories, it offers these outstanding advantages:

Flow Rate Interchangeability—Exclusive "snap-in" tube construction permits quick and easy change in range. Operator can switch from 0.2—2.0 scfh range to 1.0—10 scfh range, or remove tube for cleaning if necessary, in just a few seconds. No tools are required.

Wide Angle Visibility—Uncluttered view assures ease in reading; minimizes possibility of error. Operator can scan a complete bank of indicators at a glance. A Memory Pointer, which shows the operator the last recorded flow rate, is an integral part of the tube assembly and also serves to eliminate parallax.

Economy—The initial cost of the F&P Air Rate Indicator is low, and little or no maintenance is required. Spare indicating tube assemblies of either range are also economically priced.

The Model 10A1125 Indicator is now in stock ready for prompt shipment.

Get the Complete Facts! Write now for Catalog 10A1125, Fischer & Porter Company, 5019 County Line Road, Hatboro, Pa. In Canada, write Fischer & Porter (Canada) Ltd., 2700 Jane Street, Downsview, Ontario.

FP FISCHER & PORTER CO. HATBORO, PA., U.S.A.

TELEPH

Presidential Press Secretary JAMES C. HAGERTY (right), in his Gettysburg, Pa. headquarters, poses with telephone representing United Telephone Co. of Pennsylvania's 100,000th station. JOHN CALDWELL, Gettysburg district manager for United, is interested witness on the occasion of his company's historic milestone.

W. R. JARMON, vice president, revenue requirements, General Telephone & Electronics Corp., addressing the afternoon session of the Tennessee Telephone Association Convention.

GOVERNOR BUFORD ELLINGTON addressing the noon luncheon of the Tennessee Telephone Association.

PHONE INDUSTRY VIEWS

THE BOOTH of the Western Counties Telephone Association was located on the main floor of the Manufacturers Building at the Western Fair held in London, Ontario, September 14 to 19, inclusive. Over 350,000 persons attended the Fair with a large number from the rural area near London. The booth was staffed by executives of the Association at all times, and featured colored slides taken of 40 Independent company offices in the area. The booth was designed and built by D. A. Woolven, of the Byron Telephone Co., Limited, Byron, Ontario.

One of the highlights of the Nevada Telephone Association Convention was the gift presented to the association by Paul R. Bond, special representative of Bell Telephone Co. of Nevada. Bond made set from woods furnished by the telephone companies. The names of the Charter Member companies are engraved on a gold band which encircles the gavel plate. The bell on top of the plate has Nevada Telephone Association with the date of organization engraved on it. Along with the gavel set, he also presented the legend done by hand in Old English print on parchment paper and framed.

JEANNETTE FRAZEE of Susanville, Calif. receives Citizens Utilities — Joseph C. Briggs Memorial Scholarship award in the amount of $500. Presentation was made by D. H. STEELE, general manager of Citizens' California telephone operations. Jeannette's father, Lewis W. Frazee, is equipment supervisor of the company's operations at Susanville, Calif. The award is the 6th in an annual program established by Citizens Utilities Company as part of a program of financial assistance to high school graduates desiring to pursue education at higher levels. The scholarship award culminates a nationwide competition among children, grandchildren, brothers and sisters of employes of Citizens Utilities Co.

T. AUSTIN SAUNDERS, president of Gen. Tel. Co. of Michigan, will be state chairman of the 1960 Michigan Week, May 15-21. The announcement was made by Edward J. Hekman, president of Hekman Biscuit Co., as chairman of the organizing committee for next year's Michigan Week. Hekman, state chairman in 1958, headed the group which chose Saunders to lead the estimated 5,000 people who will soon be at work on state and local committees.

In emergencies, Graybar, too, is always ready to help

Emergencies come in many sizes, not all so easily handled as this. Wind, flood and ice can wreak havoc on your lines, with little or no warning, as all in the industry know. When an emergency arises in your area, whether day or night, you can always count on Graybar for the vital, extra help you want.

Call us, also, whenever a need arises for technical assistance. Graybar is staffed for the job.

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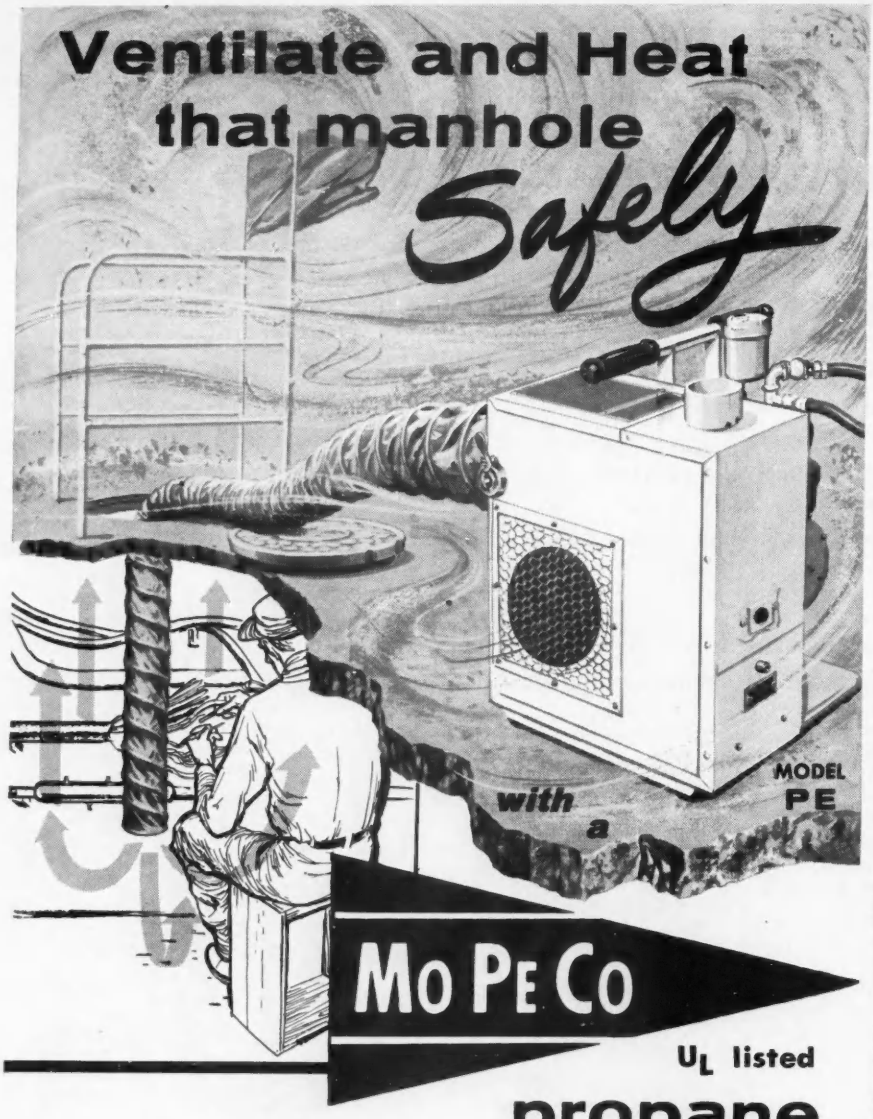

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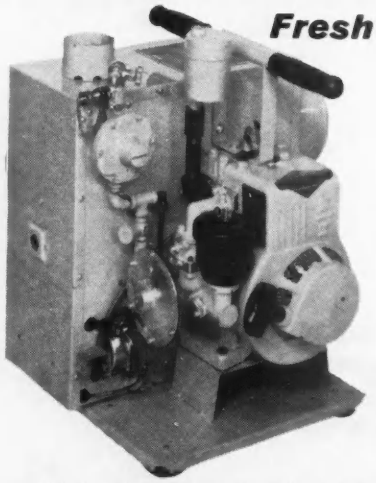

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THE NATIONAL Association of Railroad & Utilities Commissioners may ask for permission to intervene, or to cite its views on the subject, in connection with requests pending before the Federal Communications Commission by four common carrier organizations that the Commission reconsider its microwave policy decision which results in the virtually unrestricted licensing of private systems.

This was indicated at the NARUC's annual convention, at which the association's Executive Committee approved a plan which will probably lead to taking some action before the FCC in the case. During the annual meeting, newly-elected President George Perrine, chairman of the Illinois Commerce Commission, expressed the view that the unrestricted licensing of private systems will have a serious impact on the revenues of regulated carriers.

Perrine said the state regulatory commissions will "not have much to worry about in separations" if the FCC policy decision of last August is permitted to stand. He said the resulting loss in interstate revenues will minimize any separations gains which might be achieved by the states — touching on another subject which was a matter of much debate at the convention.

The Inflation Problem

AMONG the various reports which were made at the meeting of federal and state regulatory officials, one containing many salient observations regarding the problems of the utilities was that of the Committee on Rates of Public Utilities, which observed that "Growing inflation and higher prices for capital will contribute to higher costs of utility service in the future. With an ever-changing condition in the national economy, considerations in the fixing of rates

GTON OBSERVATIONS

By ROLAND DAVIES and FRED HENCK

must be prospective as well as retrospective. To enable regulatory commissions to substitute the long-term interest of all for the immediate self-interest of a few, applicant utilities must submit to the reviewing commission a broader picture than the formerly accepted test year . . ."

It further commented that "Public utilities are particularly affected by rising costs. They have no election in the matter of investment to provide the ever increasing demands for service. Their rate of capital turnover is much lower than for manufacturing and commercial ventures. Their investment is still higher per unit of service by reason of the fact that utility construction costs have risen faster than the wholesale price index."

The NARUC group reported that "Telephone rate increases granted in the year 1958 amounted to $104,000,000, equivalent to about 1.4% of revenues. Some $38,000,000 of proposed increases were pending at the end of the year. It is to be noted that telephone rate increases accounted for about 40% of the increases granted in 1958. Because of their heavier labor burden, telephone companies are affected in a greater degree than other utilities by rising wage costs. Telephone companies have to spend between 35% and 50% of their revenue dollar for wages and fringe benefits, whereas electric utilities need to allocate about 17%."

In the past year, the report went on, "the telephone companies of the nation have intensified their efforts to develop markets for new services. Telephone utilities are especially hard-hit by continuing inflation. Wages are a larger part of their costs of operation than are the labor costs for other utilities. Additional demands for service at mounting construction costs result in an ever-increasing investment per station . . .

"To the extent to which new markets for new services can be developed, with sufficient margins of profit in like measure, can requirements for rate increases be minimized. Beginning with color telephones, a varied list of new and attractive equipment for customer use is being developed. Indications are that this is but the beginning of the development of markets for new services, and it is predicted that in the next 10 or 20 years home and businesses will be equipped with more elaborate communication facilities, including a variety of new telephones, switching services, interior communications systems, loudspeaking telephones, and many other services. Other potential markets are in the field of data transmission and other elaborate communication systems for industry, the national security effort, and other governmental authorities.

NARUC Committee on Rates of Public Utilities tells convention "growing inflation and higher prices for capital will contribute to higher costs of utility service in the future . . . . George Perrine, chairman of the Illinois Commerce Commission, elected NARUC president.

"This is an undertaking which is more competitive than the furnishing of basic telephone service. In the field of residential service, the telephone industry must compete for the consumer dollar with the suppliers of automobiles, an ever-increasing number of household appliances, improved housing, and a host of other offerings for a higher standard of living. With industry and governmental agencies, it must compete with subscriber-owned facilities.

"Such new markets involve the commitment of capital in investment having a higher risk than that invested in basic telephone service. These new products, being less essential, are much more susceptible to fluctuation in appeal with changing economic conditions and other developments. The introduction of these new products and services presents new problems in ratemaking. If rates are prescribed providing for above average return because of the higher risk and optional character of such products and services a continuing development of the markets for such products and services will offer a substantial offset to attrition resulting from growing demand for basic services. Consideration must also be given to provisions for depreciation, having regard for the probability that the introduction of new products may result in foreshortened life of existing facilities. The problem for regulation is to provide the required incentive to promote quality, efficiency, and innovation in service."

Toll Rates

ON THE SUBJECT of long distance telephone rates, the NARUC committee commented that "For some time, telephone companies have been putting into effect greater differentials for calls requiring special or extra operator handling, in order to hold the prices of the respective types of calls in line with cost of handling. With the rapid expansion of direct distance dialing and higher wages, these cost differentials are becoming even greater than they were in the past.

"In the eight years since the introduction of direct distance dialing in 1951, terminals with access to (DDD) have gone from 8000 to 8,000,000 in the Bell System. In the next few years, it is expected that the increases will be at a greater rate — possibly to 45,000,000 by 1965. It is important

WASHINGTON OBSERVATIONS

(Continued from page 41)

that rate structures be further revised in line with costs to encourage the use of direct dialing.

"Only a few years ago, the usual rate differential between station-to-station and person-to-person toll calls was 35-40%. By the middle of 1959, this differential was 100% in eight states, about 75% in one third of the states, and was 60% or more in three fourths of the states.

"Since operator handling costs increase at night and on Sundays, night and Sunday discounts on person-to-person calls have been eliminated in nine states. In recognition of these same cost factors, many states have now authorized the application of added service charges on all station collect calls.

"The recent reduction in Bell System interstate long distance telephone tolls has emphasized again the disparity between charges for interstate telephone toll calls and intrastate telephone toll calls."

The regulatory commissioners, at their annual convention, also: referred two resolutions calling for an investigation of interstate-state telephone rate disparities to its Special Telephone Committee; adopted a resolution calling for repeal of all federal excise taxes on telephone and telegraph service; and heard retiring NARUC President Matt L. McWhorter, chairman of the Georgia Public Service Commission, offer a threefold recommendation to combat federal "invasion" of states' rights.

The Special Telephone Committee report noted that the NARUC-FCC telephone staff committee had recommended that "it be authorized to undertake a study of possible changes in telephone separations procedures, with special attention given to studies of the so-called Phoenix plan, circuit mile plan, and message-mile-minute plan." The commissioners' committee added that it concurred in the proposal, and offered the resolution instructing the STC "to proceed with studies of further refinements in separations procedures."

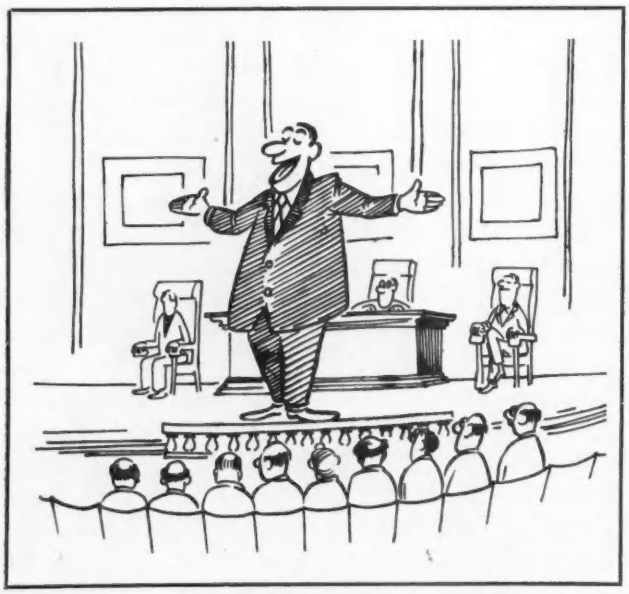
The Special Telephone Committee was also instructed to continue with recommended studies of the Western Electric Co.'s accounting system, its cost apportionment procedure, pricing policies, and the adequacy of results stemming from them. The committee recommended that "the study of Western Electric be referred back to the staff committee for more definite recommendations as to the scope, character, manpower, and financial requirements of the studies, in order that your committee may be more fully informed prior to considering its further recommendations to the association."

The committee said it desired especially "to point out the fact that the consent decree requires Western Electric to maintain 'cost accounting methods that conform with such accounting principles as may be generally accepted and that afford a valid basis, taking into account the magnitude and complexity of the manufacturing operations involved, for determining the cost to Western of equipment sold to AT&T and Bell operating companies for use by them in furnishing common carrier communications services'."

Toll Rate Disparities Criticized

TWO RESOLUTIONS criticizing existing interstate-state telephone toll rate disparities, one calling for appointment of a special committee to study the matter, and the other directing such an investigation by the Special Telephone Committee, were referred to the STC for action by the convention.

In its report, attached to the state-



Explaining the "Temporary 10% Telephone Tax" to Congress . . . 1941.

Explaining the "Temporary 10% Telephone Tax" to the boys back home . . . 1959.

ment of the telephone commissioners' committee, the telephone staff committee recalled that last year's convention had directed a study of the relationships of Independent telephone companies and their affiliated manufacturers. It pointed out that soon thereafter the Sylvania Electric Co. was merged into the General Telephone & Electronics Corp. and "This produced an additional complication, and no further work has been undertaken in the light of the new situation."

"Separations"

DISCUSSING separations, the staff group said that the present, and recently revised, separations manual should be left intact. Recalling the interstate rate reduction, it pointed out that disparities continue to exist, and also "applications for state rate increases are pending in a number of jurisdictions." It therefore suggested separations studies, encompassing the various plans referred to by the commissioners' committee, and "other procedures that may be suggested."

Mr. Perrine observed, during the course of the convention, that "something should be done" about telephone separations. He commended the FCC staff for its willingness to cooperate with the associations on separations matters, and declared that if the commissions "put up a united front" on the subject, "we'll at least have our foot in the door." He also pointed out that some states have used intrastate gains from earlier separations changes to keep down exchange rates, and he noted that the objective of the separations revisions was to reduce intrastate-interstate toll rate disparities.

He also reported that the Special Telephone Committee plans to hold a meeting on separations by Christmas with the appropriate staff groups. Contrasting the two main areas of recent NARUC telephone activities — separations and the investigation of Western Electric pricing policies and accounting procedures — he remarked that separations probably is of greater interest to the state commission, and that "at least" Western Electric's prices "are the same to everyone" in the Bell System.

During a seminar, Mr. Perrine also discussed the trend in interest rates briefly. He evoked some support from state commissioners in attendance with his view that it "does not make sense" for the federal government to borrow money at 5% and then lend it to Rural Electrification Administration borrowers at a 2% interest rate.

Finance Committee Report Stresses Impact of Inflation

NARUC's Corporate Finance Committee was another which stressed the impact of inflation in its report. The group declared, after reviewing recent trends in debt and equity capital costs, that "With the outlook for continued inflation, more attention is being given to this subject than ever before, and utilities will have to offer their investors opportunities commensurate with alternative investment in order to obtain the necessary funds. That, of course, points out the need for commissions to give attention" to the tests of "maintenance of the credit and integrity of the investment and comparable earnings of investments of similar risk.

". . . This committee suggests that commissions, as well as utilities, take careful consideration of the economic climate in today's world in setting rates. The postwar period has been one of tremendous growth attendant with a rising price level as a result of the postwar inflation . . . As has been demonstrated by the earnings of unregulated business, during periods of growth earnings must necessarily be at high levels, otherwise new capital will not be injected into the economy."

Along this line, the Committee on Valuation declared that "it is apparent that all regulatory agencies must take into consideration the rising price level to ascertain whether adequate value is measured in providing fair rates of return. Proper valuation is imperative to maintain a healthy utility industry in condition to meet the challenge of the future growth of our economy." — *Roland Davies* & *Fred Henck.*

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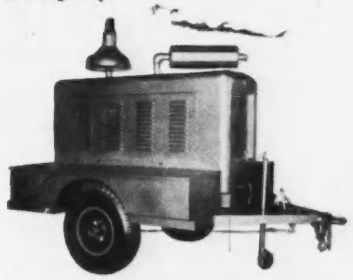

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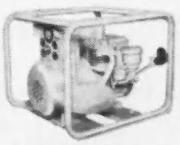

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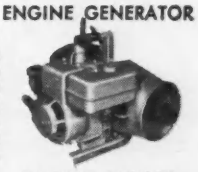

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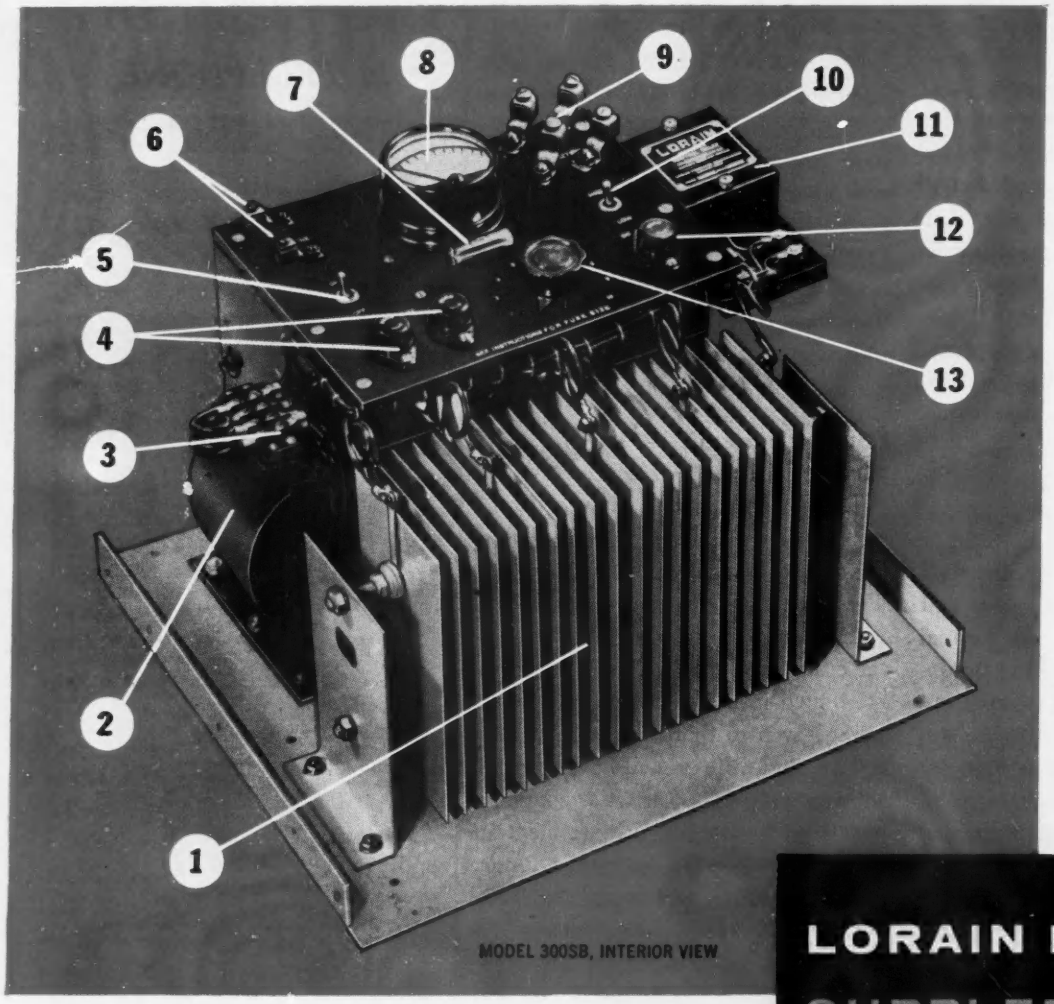

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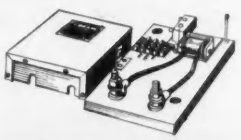

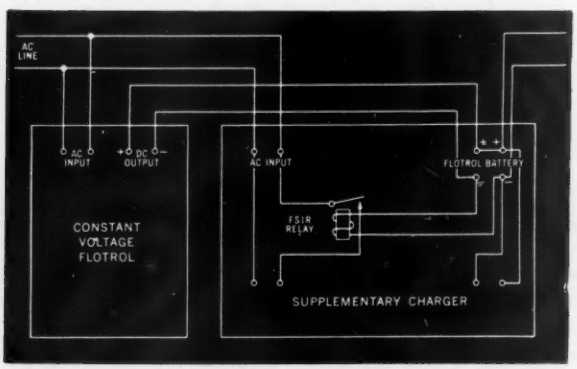

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EDITORIAL

"NARUC Recognizes The Facts"

AS YOU KNOW, if you are a regular reader of this TE&M page, we believe the decisions made by state regulatory bodies play an important part in making it possible for the telephone industry to meet its management objectives.

In the main, we are in favor of regulation and believe it is necessary where monopoly rights are given — but, at the same time, we are against too much regulation, or regulation which literally ties the hands of management and restricts its resourcefulness.

These thoughts came to mind the other night as we reviewed rate orders issued this year by state regulatory commissions and compared a few decisions with remarks made at the recent convention of the National Association of Railroad & Utilities Commissioners (NARUC). (*See report on page* 40.)

For example the NARUC Committee on Rates of Public Utilities reported to the convention that "*Growing inflation and higher prices for capital will contribute to higher costs of utility services in the future. With an ever-changing condition in the national economy, considerations in the fixing of rates must be prospective as well as retrospective . . .*"

The Corporate Finance committee suggested that "*commissions, as well as utilities, take careful consideration of the economic climate in today's world in setting rates.*"

"*The postwar period,*" the committee report stated, "*has been one of tremendous growth attendant with a rising price level as a result of the postwar inflation . . . As has been demonstrated by the earnings of unregulated business, during periods of growth earnings must necessarily be at high levels, otherwise new capital will not be injected into the economy.*"

One would have to look far and wide to find anyone who will disagree with the truth of the comments made in reports of the NARUC Committees.

Yet, despite such reports, which evidently have the approval of the majority of the nation's top regulatory commissioners, the fact remains that the rates and earnings made possible by some rate orders do (1) curb enterprise rather than encourage its expansion; (2) prevent or limit profit and thereby halt the benefits that do come to the customers of a profit-making company; (3) keep capital away when it should be attracted; and (4) discourage effort when it should be stimulated.

There is much in the past and in the present, to indicate the NARUC membership places a much different interpretation on things it believes good regulation should encourage than is reflected in some decisions made by state regulatory bodies.

A close reading of reports presented at NARUC conventions during the past three, four, or even five years, indicates its committee believe:

(1) *Faster growing inflation with continuing expansion of utility facilities at ever-increasing prices to meet demands for service has imposed additional responsibilities on the commissions.*

(2) *To meet the challenges of their increasing responsibilities and fulfill their obligations to the users of service and the providers of service the regulatory commissions must have vision and perspective and their policies must be compatible with the programs of those utilities who plan for the long pull as distinguished from the make-do or short-haul plan.*

(3) *Regulation that is oppressive may work to the immediate advantage of the user of the service today but it may work to his disadvantage for many tomorrows.*

In our opinion such thinking adds up to one fact: *The public interest must be safeguarded, but the commission must recognize public interest is not safeguarded if the utility through denial of fair rate treatment is not able to provide the quality and the quantity of service needed by the public.*

However, such thinking must reach out beyond the confines of the NARUC meeting places and become an important part of the thinking that must precede the issuance of a rate order.

When it does just that, we believe the rate orders that are signed, sealed, and delivered each year will conform more closely to the ideas expressed at NARUC conventions.

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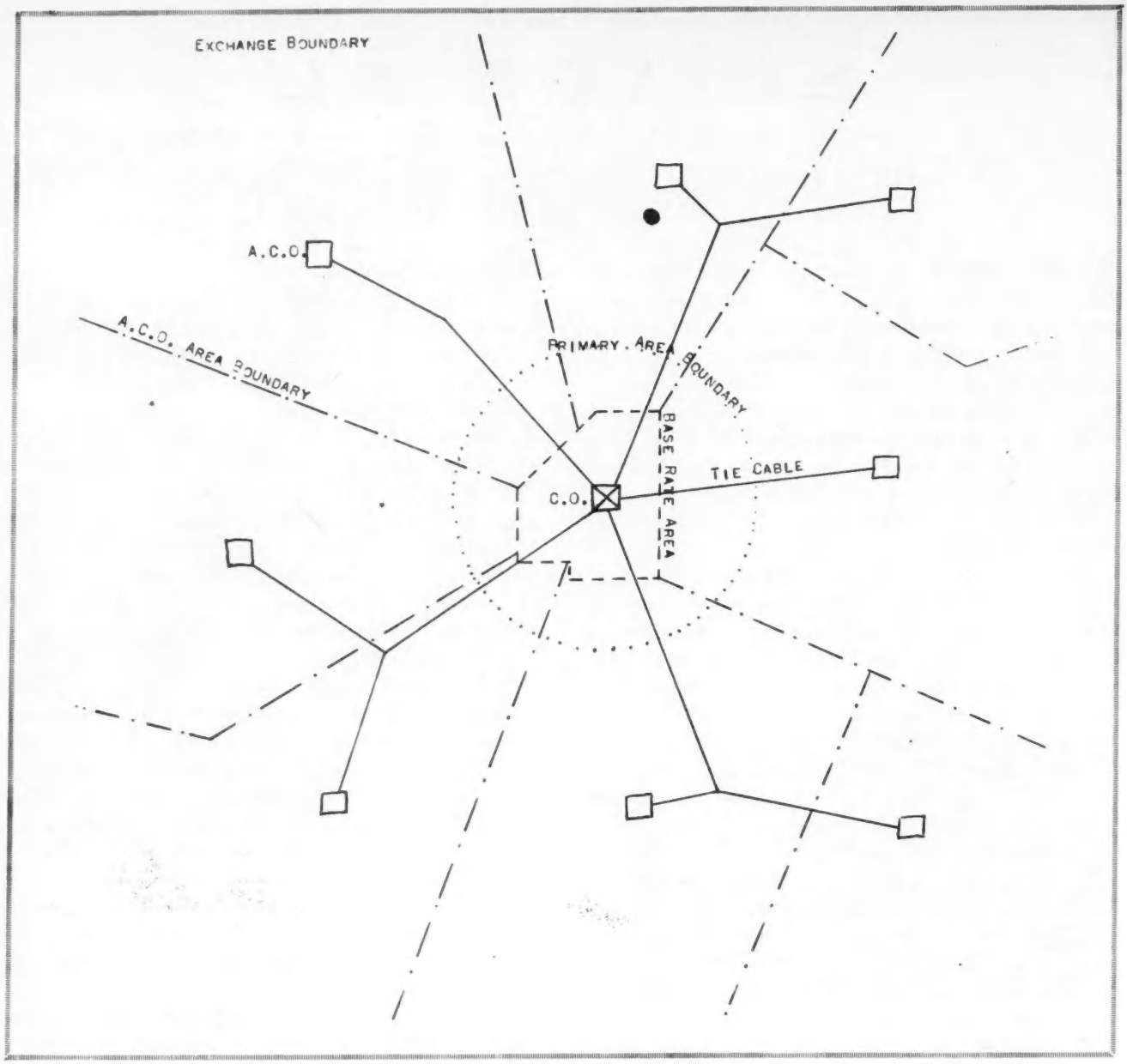


Typical Exchange Area Map.

Meeting Rural Demand *For* 1-Party Service

By BILL CORMAN

IN A RECENT article (TE&M, 8/15/59) I referred to the problem of up-grading rural telephones as one that we (and several other small company owners) believe will be one of the big problems of small companies in the next decade. This belief has been caused by requests of many people living in rural areas for one and 2-party service. In the previous article I invited ideas, however wild they might seem, that would help solve the problem.

One such idea is the subject of this article. I admit I am not enough of a central office technician to evaluate this idea, but it does seem to have some merit. Also, I am not sure it is an original idea, but I have not heard of it being presented exactly this way.

Briefly, the idea concerns the "*exploding*" of the central office components. To start, think of a dial office as consisting of three principal components, *line finders, selectors,* and *connectors.*

In a conventional central office, these three are housed under one roof. Under the new idea, they would be split apart. The selectors would be housed at the main central office and the line finders and connectors would be housed at various points around the exchange area in Auxiliary Central Offices (A.C.O.'s).

Dividing The Exchange Area

THE MAP ("Typical Exchange Area") is an example of how an exchange area might be divided. Each A.C.O. boundary would be laid out so as to inclose present and future requirements for 100 1-party and/or 2-party phones. If this seems a lot, remember that this whole idea is based on the premise that sooner or later practically all rural users of phone service will want a high grade of service.

In other words, the A.C.O.'s would serve only one and 2-party telephones, and a maximum of 100 of some combination of these. Anyone wanting conventional 8 or 10-party service would be served as at present, directly into the main Central Office. Under this idea, four or 5-party graded service would not be furnished in rural areas.

The Schematic trunking diagram below shows how the C.O. and the A.C.O.'s would function as a unit. The upper portion of the diagram is the A.C.O. and the lower portion is the main C.O. For all telephones located in the "Primary" area, and for all 8-party or 10-party phones located in the rural areas, only the main Central Office would be involved. The A.C.O. comes into the picture only when calls are made from or to the one or 2-party rural phones.

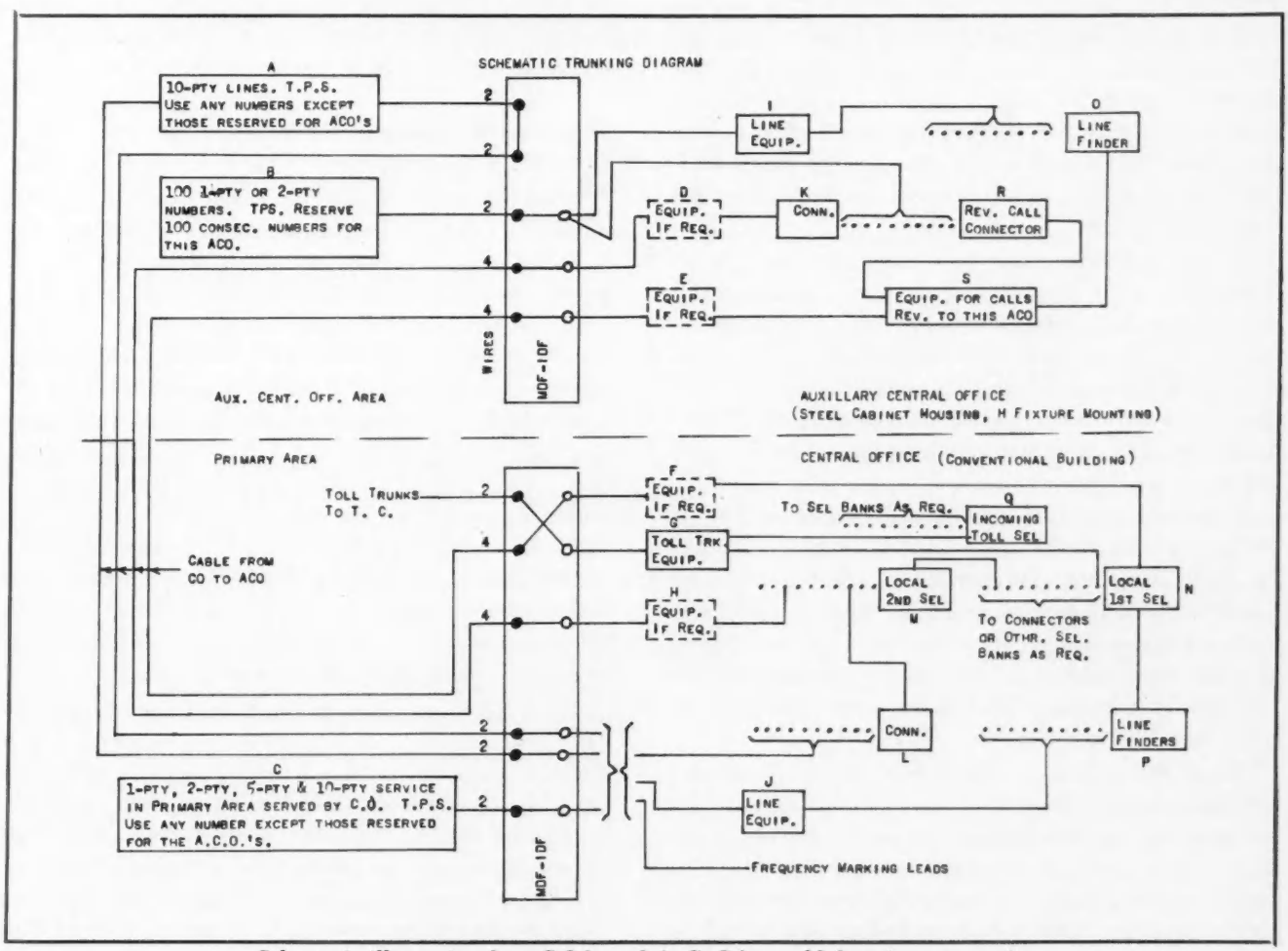
A typical call might be from one of the telephones in block "B" to phone in block "C." If such a call were made from "B," line equipment "I" would activate line finder "O," and local 1st Selector "N" would be ready to receive the dial pulses.

Equipments "E," "F" and "S" are disregarded for the moment. The call would move through the selectors to Connector "L" and thence out to a telephone in block "C." A call from one phone to another connected to the same A.C.O. would progress as follows: B-I-O-S-R-B. A call from C back to C would be: C-J-P-N-M-L-C. A call from "C" to "B" would be: C-J-P-N-M-K-B.

It will be noticed that the line finder "O" in the A.C.O. is tied to local 1st Selector "N" by a 4-wire circuit, and that the same is true for the circuit from selector "M" to Connector "K." It will also be noted that optional equipments "D" "E" "F" and "H" are placed in this pair of circuits. They were placed in the schematic with the idea that they might be required for either one or both of two reasons:

(1) They might be required to act in the nature of long-line adaptors and/or as AC-DC rectifiers; and (2) they might be designed to permit 2-wire circuits

Next page please



Schematic illustrating how C.O.'s and A. C. O.'s would function as a unit.

instead of four-wire circuits. If this could be done, the cable pair requirements between the C.O. and the A.C.O. would be cut in half. This possibility will be referred to later.

At this point it might be well to take a look at what we have accomplished. In the first place, we should not have added too greatly to central office costs. We have taken just about the same equipment that would have been required had all of it been located in the main Central Office, and spread it around at different points. We believe that the maximum equipment necessary to serve 100 A.C.O. telephones can be housed in a relatively small space — say a steel housing 2½′ x 6′ x 6′ — and that the main central office space requirements will be relatively reduced, so we have not added greatly to housing costs.

The Outside Plant

BUT WHAT about outside wire lines? What have we done there? Naturally every situation would be different, but at least there are some generalized statements we can make.

On the present conventional basis of providing 1-party service to rural users, we simply have to get a pair of wires (or a carrier circuit) from the main Central Office to each telephone. Service to 100 such users would require (for most of the distance at the very least) a 100-pair cable. With the A.C.O. established, however, the requirements would be different.

You might want to change these figures some, but let's assume that to serve 100 1-party phones 10 line finders at point "O" will be required. Let us further assume that two line finders can be backed up to Reverting Call Connectors "R" through equipment "S." This leaves eight line finders to be backed up by Selectors at point "N."

In the other direction, let's assume we require 10 Connectors at point "K" tied back to Selector "M." In all then, between the two exchanges, we have required 18 circuits with four wires each, or 36 pairs. Therefore, the comparison is generally between a 100-pair cable and a 36-pair cable as, generally, the 36-pair cable would have to run about as far as the 100-pair cable.

If we can assume that the 36-pair cable would cost ½ as much as the 100, then what we have said is that we have about cut our distribution plant requirement in half. Theoretically, therefore, we have about broken even on the central office equipment and on housing for this equipment, and have cut the distribution costs in half. This is the point that leads me to believe the idea may have some merit.

There are numerous other ramifications of the idea which might be discussed. For example, it will probably be necessary to have ringing current and standby DC power at each A.C.O. But since we need only one ringing frequency, and since we need power for only 100 stations, both items are inexpensive. As hinted at earlier, it may be possible to reduce the required wires in the circuits between the C.O. and the A.C.O. from four to two. If this could be accomplished, the pair requirement would be cut from 36 to 18, and a further substantial saving realized. This would be merely a matter of balancing the extra equipment required against the savings in cable pairs.

Placement of A.C.O.'s

IF YOU GO into the matter a little more deeply, you will see that the exact placement of the A.C.O.'s is a difficult task. Laying out the boundary and determining the mathematical wire center is not enough.

For one thing, there is the "Back-up" consideration. This involves those telephones between the C.O. and the A.C.O. for the trunks have to go out to the A.C.O. and the lines have to back up to the telephones. Again theoretically, the A.C.O. should not be at the wire center. It should be located some place between the wire center and the primary area boundary. Practically, the placement of the A.C.O. will depend largely on where roads are, where they cross, etc. A.C.O. area boundaries will also depend largely on these same items plus the location of existing distribution lines into the rural areas.

The size of the primary service area, that area which will be served directly out of the main Central Office for all classes of service, will also be difficult to set. Theoretically, it should be about 1/3 of the way from the central office to the exchange boundary, but again, this would be practically determined by existing roads, telephone saturation, and other factors.

The Rate Problem

AND STILL again, if you go into the matter of rates, the going gets a little thick. Of course, the actual dollar level of the rates will necessarily depend on what it might cost to furnish this type of service. But, it appears to me, such a scheme as this would just about do away with our present method of figuring rates for graded service in rural areas — that is, on a mileage basis.

It wouldn't seem reasonable to figure the rates from the main Central Office, and if they were figured from the various A.C.O. points, all sorts of queer things would happen. I believe the one and 2-party rates in the A.C.O. areas would have to be flat rates, somewhat higher than comparable rates within the primary area. There might even be a further differential between telephones within the base rate area and telephones outside the base rate area but still within the primary area.

So there is an idea. Perhaps someone has already tried and disproved it. Or perhaps you can take it and improve upon it, or take a tangent from it and come up with something much better. At any rate, this is a problem I believe we must solve, in some manner or other, and sooner or later.

What are your thoughts and ideas on the problem. Send them to me in care of TE&M and we'll be glad to report your suggestions to our readers. — *Bill Corman.*

Elyria Telephone Co. used eye-catching 6-sheet billboard advertising to arouse subscriber interest in DDD program.

Make Your DDD Successful

As told to GEORGE B. FORBES
by FORREST EHERENMAN,
A. C. BERNSTEIN, Warsaw, Ind.,
and A. F. HARDMAN, Cleveland, O.*

Ideas that worked, from men who made Customer Direct Distance Dialing by their subscribers an immediate success. Many TE&M readers will soon be faced with the same situation; first to win their subscribers over to the DDD concept, then help them do their part efficiently so as to get the full benefit of the investment. Because these proven techniques may help you they have been printed by TE&M.

AN INFORMED public is half-sold. . . . *"We took Ads telling our people we were planning DDD, well in advance. Subscribers like to feel that their telephone company is moving forward — is among the leaders."*

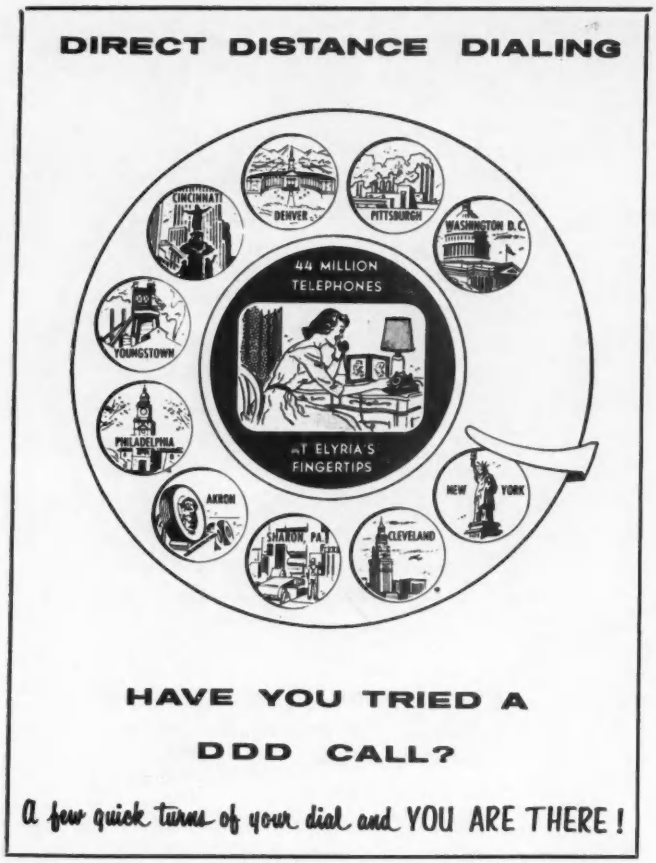
This was voiced strongly by all, Mr. Eherenman, Mr. Bernstein and Mr. Hardman.

The telephone companies wanted their subscribers to ask, "What is this DDD thing, and what can I do with it?" When the bridge tables and the business lunch set start buzzing about something strange, each person wants to appear an "expert" in his own group. For this reason they will keep tuned in to anything the company says. Keep the ads and releases flowing, bit by bit — never too much at a time.

The standard approach is faster service . . . . "Rocket Fast," as they say in Elyria. Sometimes the ads stress the "fun" angle — the do-it-yourself idea that has become dominant in American life today.

And, if there is a reason to face the issue, the company

**Forrest Eherenman is general commercial supervisor for the United Telephone Co. of Indiana, Inc.; A. C. Bernstein is commercial representative for public information in the same company. This company has had DDD in several of its larger offices for some time; and has plans to expand the program in the next few years. A. F. Hardman is public relations consultant for Elyria Telephone Co., Western Reserve Telephone Co., Mansfield Telephone Co., and Chardon Telephone Co. — all in Ohio. The Western Reserve company was 1st in the state to offer subscriber direct distance dialing. The Elyria company recently put its system in operation.*



Everybody in—
WARSAW, MILFORD, LEESBURG, *SYRACUSE
NORTH WEBSTER, CROMWELL, ATWOOD, BURKET, MENTONE
MILLWOOD, ETNA GREEN, TIPPECANOE
*Service in Syracuse Starts April 19th
Uses the new Nationwide
DIRECT DISTANCE DIALING
BECAUSE . . .
IT'S FASTER!
TO DIAL YOUR OWN LONG DISTANCE CALLS!
For Instance: the Station-to-Station Night and Sunday Rate for 3 Minutes
WARSAW TO MIAMI BEACH, FLA. . . . $1.45
UNITED TELEPHONE COMPANY OF INDIANA, INC.
W. D. SADLER, District Manager

Newspaper ads of Elyria Tel. Co. and United Tel. Co. stressed speed, fun and low cost of DDD.

frankly states that DDD will save money — for the telephone company (stressing circuit holding time rather than labor), and for the subscribers (holding toll rates down.)

Expect Some Resistance

NOT EVERYONE will run to embrace DDD. Expect some resistance, and try to anticipate what form this will take — then have positive answers, simply and reasonably stated.

These men found that the principal fear was lack of confidence. Some subscribers said — "*I don't believe I could ever dial that many numbers without making a mistake.*" Yet, numerous exchanges have recently changed from four to five to seven-digit numbering with no appreciable rise in mis-dialing. This fact should be pointed out to the fearful subscribers and they should be reminded that they can still reach an operator if necessary.

"*Suppose I make a mistake?*" There's a simple answer to that one. Explain how they ask for city and number reached, then immediately call operator.

"*Can other people's calls be charged to me?*" The response, of course, depends on the type of verification furnished in the equipment. The United Company uses MID (Manual Identification) systems, so the operator enters the connection just long enough to ask for the calling number. The Western Reserve and Elyria companies have LID (Line Identification) systems, so the subscriber dials the *circled* digit on his own instrument for automatic checking of the calling station.

But the best answer of all is the inherent honesty of the telephoning public, with unchallenged charge numbers the accepted rules for toll traffic. DDD — if it brings any change at all — moves in the direction of *greater* control of billing.

Dial "Unfair To Subscribers!"

STRANGELY enough, some telephone users have voiced objection to "doing the work of the operator." Many years ago Carter Glass of Virginia made a fiery speech on this subject on the Senate floor and nearly succeeded in keeping dial service out of Government buildings. Only when the telephone company presented the plain facts about speed, accuracy, volume of traffic, and a cost vs. rate study did the dial program win complete support.

Elyria depended principally upon advertising, both newspaper and radio, stressing speed, fun and low cost. This was tied in to the company's "Blue Book of Telephone Numbers," giving Area Codes for principal dialable cities, complete instructions as they applied to Elyria subscribers and blank pages for entering numbers of DDD calls for future reference. Excellent experience since cutover proved the effectiveness of this ad campaign. Anyone wishing to learn the type of display or radio spot used in Elyria may make inquiry through *Telephone Engineer & Management.*

Most unusual advertising was a set of posters placed on public trash cans.

Decals placed on company trucks brought DDD message to hundreds of citizens.

Some Prefer Demonstrations

"WORD-OF-MOUTH advertising after one of our demonstrations (of DDD) is worth more than all the radio spots you could ever afford to buy," according to Forrest Eherenman of United.

"Usually we arrange a gimmick or two the day before the demonstration. Let's say, for instance, that the president of the Mothers' Study Club has a son in the Air Force, stationed in Hawaii. We'll alert the boy to be at the telephone at a certain time on the day of the demonstration. Then, during the course of the demonstration we announce that we're going to make a 'surprise' call for the president of the club (who has *not* been forewarned). Ten or 13 pulls of the dial and 10 seconds later, the whole club is hearing a mother-son conversation between here and Hawaii. Twenty seconds more and there isn't a dry eye in the house. All those women are straining at the leash to rush out of there and tell somebody about the miracle they've just witnessed!"

The first question usually asked by the guests is, "How soon do we get it?" United then gives them an advanced instruction sheet to read over; tells them to watch for the new directory where all necessary information is placed in a special "blue" section for easy reference.

Putting On A Demonstration

SERVICE CLUBS and Women's Organizations are usually scraping the bottom of the barrel for a "new" program. There's nothing newer than DDD, and if you make a date there will be a good "house." Let's let A. C. Bernstein tell how he does it.

"I use a colored dial handset with an induction coil permanently mounted in the space normally occupied by the ringer. The plug from this coil goes into the jack on a 5-watt amplifier. This unit will work for a group of 40 or in a 400-seat auditorium. In a large hall I use a lapel mike with a public address system for lecturing before and after the amplified telephone calls."

Also valuable, Mr. Bernstein finds, is a map which can be used to show Area Codes. While he uses a large tripod-mounted map, others may choose to project this map from slides, along with other illustrative material taken with any good 35 mm. camera.

So the demonstration doesn't look "rigged," it is wise to have along a list of interesting dialable numbers, with someone in the audience placing an impromptu call.

Mr. Bernstein also carries a Toll Ticketing Recorder. Its function and operation is explained in non-technical terms; then for groups of 80 or less he passes it around so the audience can "feel the merchandise."

Setting Up Live Calls

ATTENTION and positive reaction is greatly heightened when the demonstrators make "live" calls rather than calls to a taped recording such as weather or time signals.

"On all live calls," continues Mr. Bernstein, "we contact the party to be called 24 hours in advance to make necessary arrangements and insure minimum circuit time.

"The information on our company's *DDD Form Two* is executed by our district manager, completed by our engineering department, and transmitted to the Bell company (in those instances where our own toll ticketing equipment cannot be utilized)."

"Canned" Calls Can Be Exciting

HOWEVER, there are several taped announcements that Mr. Eherenman has found useful. "415 plus LOST DOG" reaches the San Francisco Animal Shelter, "202 plus FISHY 50" produces an aeronautical weather forecast for pilots in the Washington, D. C. area, and "303 plus CH 2-2550" gives a short varied telephone commercial (colored phones, low long distance rates, etc.) and correct time. The location is Grand Junction, Colo., and is produced by Mountain States Telephone &

Next page please

Telegraph Co.; however, there is no mention of the company on the tape.

"For programs in elementary schools," Mr. Eherenman relates, "we contact Merle Tucker, owner of Radio Station KGAK in Gallup, N. M., (UNion 3-4444). That is the only station in the U. S. that regularly programs 40 hours per week in the Navajo language. Upon prior notice he will arrange for one of his announcers to read a couple of spots in Navajo and then the same spots in English. He'll also tell the kids a few interesting facts about the Indians. This is always a big hit with the Crayon Crowd."

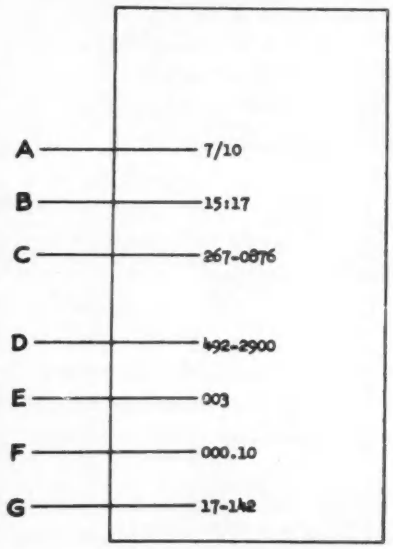
Kids Teach Parents

SURPRISING as it first seemed, the kids (from 5th grade through high school) are able to absorb the message and catch on to the techniques of DDD better than the average adult. For this reason the United companies like to give demonstrations in schools, and find the administrators very happy to cooperate. These boys and girls, uninhibited by the past and anxious to show their mastery of new ideas, do an excellent job of teaching their parents. With up to 400 enthusiastic "salesmen" from a single demonstration, this is low cost public relations!

All students are given a printed sheet of preliminary instructions to take home. Arrangements are also made to distribute in the primary grades (1-4) a "color me" sheet with block outlines of instruments to be colored and a message on extension phones. Corny? It makes sales.

Needless to say, during the demonstration of DDD before adult groups there is a ready-made opportunity to talk commercial services with the business audiences, or to sell that step-saving second phone to the ladies clubs. A simple table top display often pulls the trick for us.

HOW TO READ A "DIRECT DISTANCE DIALING" TOLL TICKET



A. The date the call was made.

B. The time the call was placed, utilizing the "twenty-four hour clock." In this example, the time is 3:17 p.m.

C. Your telephone number. The first two numerals are actually your two-letter prefix.

D. The out-of-town area code and/or telephone of the party you called.

E. The number of minutes you talked.

F. The charges for the call, less tax.

G. This is merely an equipment identity code for the telephone company's use.

This form gives subscribers complete information on how to read a "Direct Distance Dialing" toll ticket.

Keep Interest Alive

RIGHT UP until the zero hour of DDD, interest is kept alive. Each demonstration put on by the United Company gave it a free story in the newspapers, whetting people's appetites for the new service.

Equally good, from a public relations standpoint, was the "Blue Book" issued by the Elyria Company. This becomes a permanent reminder that the telephone company wants to make DDD easy and pleasant. (Mr. Weldon Case, president of the Elyria (Ohio) Telephone Co., will be glad to tell any interested manager how this book was prepared.)

Both companies used eye-arresting decals on company vehicles (a reasonable source is the Poster Display Co., of Indianapolis.)

Elyria made use of eye-catching 6-sheet billboard advertising. Also, the company made a satisfactory arrangement with the principal hotel to feature the DDD story on table mats. Possibly the most unusual advertising was a set of posters placed on public trash cans!

Both companies found that an occasional ad insertion even *after* conversion pays for itself by promoting greater usage of the service.

An Investment, Not a Cost

THIS ARTICLE has purposely covered *more* approaches than any one company would necessarily follow. And each manager planning DDD will have other ideas suited to his own situation. But all who are now enjoying the extra revenue and greater operating efficiency made possible by DDD agree on one point: Advanced preparation is very important. It is an investment that pays huge dividends. — *George B. Forbes.*

New Book

"Analytical Transients," By T. C. Gordon Wagner; 202 pages, 6 x 9, $8.75. Order from Educational Division, "Telephone Engineer & Management," 7720 Sheridan Road, Chicago 26, Ill.

The author presents the means of acquiring the more advanced mathematical knowledge necessary for a greater understanding of network analysis, Fourier series, and the LaPlace transformation.

ACCOUNTING NOTES

by G. M. JONES

Depreciation: - Theory and Practice

In this issue Doctor Jones begins a discussion of depreciation, aimed at helping each TE&M reader understand the nature of depreciation charges and the nature and purposes of depreciation reserves.

THIS IS the first of several installments dealing with depreciation in theory and in practice. In 1958 the USITA Accounting Committee made a strong case for some recognition of "economic depreciation" in its report to the 61st annual convention. Today, it seems timely to follow that report with some discussion of fundamentals, and some observations on the mechanics, the extent, and the ramifications of proposals to implement the much-needed adjustment for persistent price-level changes.

There is a lot of confusion about the meaning and use of that word "depreciation" which accountants, economists, and engineers use so freely and sometimes so misleadingly. Misunderstandings about the nature of depreciation charges, and about the nature and purposes of depreciation "reserves," arise rather naturally because depreciation is a many-sided concept, and what it is considered to be for one purpose (such as taxation) may conflict directly with what it is for some other purpose (such as replacement of assets).

Men who have spent most of their lives struggling with the conjectural questions of depreciation cannot agree on either its nature or the niceties of recognition for the several business purposes. Small wonder that the plant engineer concerned with the maintenance of productive capacity, the accountant seeking a convenient and systematic way of spreading the cost of an asset over its useful life, and the company treasurer whose interest is in finding funds for the business, all have some different notions about depreciation. Like different gallery-goers studying an abstractionist painting, each of us perceives its meaning on the basis of our particular contact and position. And to many it makes no sense at all.

The Author, G. M. JONES, is associate professor of Accounting & Financial Administration, Michigan State University.

The Cost Expiration Concept

THE LIFE of any business consists of a flow of events and transactions that go on over a long, long time. Since managers, investors, and the government cannot wait until the end of life to find out how the business is to come out, we arbitrarily chop up the flow of business life into short periods: a month, a quarter, or a year.

At the end of each period, a report is prepared to show in dollar terms how the enterprise has been doing and how it stands. An attempt is made to identify the results (income) with the efforts (expense) made in that period. We try to recognize as best we can the efforts of *things* used in the business as well as the efforts of people.

Some of these things are very long-lived, and provide services over a number of years. Hence, a portion of the cost of these permanent assets is felt to be utilized each period until finally they have no utility left. We attach the "depreciation expense" label to the allocated piece of cost which is regarded as an expense of the operating period.

Depreciation accounting spreads the cost of a building (or a truck, or an underground cable, or a typewriter) over the estimated useful life of the thing, in such periodic amounts that, by the time the thing is no longer useful, its cost will have been fully matched against periodic income.

This use of depreciation terminology means cost expiration or cost amortization; a little piece of the original cost is used up or "expires" in each operating period in the process of producing income. (After all, the word "amortization," which is favored by many accountants, is derived from *ad mortem*, toward death.)

Accountants are criticized for their failure to state this periodic depreciation charge in terms other than historical or original cost. In order to judge the validity of that criticism, we have to look at the purposes for which they are to account. One of their primary responsibilities is to account for the dollars committed to the enterprise by its owners and creditors, and the dollars committed to specific investments by the enterprise.

They are to report on what was done with those *dollars* and the results of their use, in financial terms. On the basis of this assignment of duties, they are doing exactly what they should do, in traditional depreciation accounting.

Now, it is conceded that they may

be dealing in the wrong kind of dollars. Perhaps they should report in some kind of economic dollar, one whose value is constant in real terms. The attempt to define such an economic dollar and to secure its broad acceptance and use is at the heart of the controversy over "economic depreciation." More on this later.

Traditional depreciation accounting makes no attempt to distinguish between depreciation due to wear and tear and depreciation due to supercession or obsolescence. It is not concerned with causes, but with the assurance of total cost recovery over useful life, whether useful life is defined in terms of physical capacity to serve, or capacity to serve competitively.

The Wear-and-Tear Concept

A MORE LITERAL approach to depreciation is the consideration of an asset's ability to do something. To the operating man who is concerned with what a piece of equipment can do and not what it cost, depreciation means something akin to "wear and tear."

A machine when bought constitutes a bundle of services, and depreciation consists of the loss of the ability to yield those services. Therefore, we sometimes see in published financial statements, an item of "fair wear and tear" as an expense, so stated in an effort to escape the restrictive accounting meaning of the word. It is intended to convey the idea of the loss of serviceability, but the figures are still those of the accountant, i.e., they represent the periodic amortization of cost.

It is unfortunate that these figures do not really measure the loss of ability to serve. Accountants themselves generally recognize this. However, there seems to be no practical way under the sun to measure the loss of serviceability. An item of plant *looks* the same and *acts* the same year after year, and no depreciation (in this sense) is visible, until suddenly, the old thing gives way, like the one-hoss shay.

To follow visible depreciaton in reporting income would mean no recognition of loss of service value until that final, fateful year of demise. Furthermore, this deferral of the recognition of depreciation until it occurs visibly, fails to show what both accountant and operating engineer really want: depreciation to measure the loss of *economic value.*

If we want a definition of depreciation which means "loss of economic value," perhaps the best way to measure periodic depreciation would be "economic value as a producing unit at the beginning of a period less its economic value as a producing unit at the end of the period."

Plant = A Package of Future Services

THERE IS more than one way to define "economic value as a producing unit." One quite logical idea is that a plant asset constitutes a package of services, to be rendered over a series of estimable future periods. The value of this package is the discounted present value of the stream of future services. For instance, the value of a single relay as a package of services consists of the value right now of its number of closures tomorrow (discounted to today) plus the value right now of its number of closures day after tomorrow (discounted to today) plus the value right now of its number of closures the next day (discounted to today) and so on, until the relay wears out. Our judgment of the future values to be derived from this relay leads to willingness to pay a given price for it today. Thus, at the time of acquisition, the present value of its expected future uses just equates to the purchase price. If that were not so, we would not buy the relay.

SUBMIT YOUR PROBLEMS

You are invited . . . to tell TE&M authors your problems of department policy or procedure on which you'd like to have an opinion.

While we don't claim to have all the answers, we'll welcome the oportunity to discuss as many as possible in our columns . . . and that could be helpful to you and others with the same (or equal) problem.

The concept of equipment as a package of future services is essentially the approach taken in equipment replacement and capital expenditures studies, which are familiar ground to many *Telephone Engineer & Management* readers.

The most reasonable and consistent method of recognizing periodic depreciation would recognize the decline in economic value, which would be defined as the present value of expected future services. The principle is clear. However, its application would lead to some treatments that are fundamentally inconsistent with the aim of escape from the arbitrary inexactitude of prescribed, historical-cost depreciation. The measurement of periodic depreciation would subject each asset to judgment at the end of each period, when its expected future uses would be evaluated, discounted to the present, and compared with the like figure last period. Any change in this judgmental valuation would then become our "depreciation expense" for the period. This approach substitutes a new arbitrary judgment for the old.

Then there is the question of identifying the values to be derived in the future from a specific unit of plant. The service-rendering ability of a unit depends on how it is linked to other units; it has no ability to produce by itself. Of what future service value is a new central exchange without cables and lines and poles and drop wires? It is the complex of units that has the ability to produce. How then is one to measure the future services of a given unit? A realistic statement of this kind of depreciation cannot be made for single assets, but only for the complex, the going concern. (I should think that such an approach might actually appeal to accountants, because there would be no individual depreciation reserves, item by endless item). The value of the aggregate plant at any point in time is the discounted present value of the future stream of services which that aggregate plant is expected to provide. Depreciation would simply be the change in aggregate value from date to date. — *To be continued.*

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The IBM **Series/50**—a complete punched card system—offers telephone companies the following advantages of low-cost data processing:

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  - settlement data
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  - rate changes
  - directory lists

Like all IBM data processing equipment, **Series/50** may be purchased or leased. For more information, call your local IBM representative.

IBM® DATA PROCESSING

"Traffic Lights"

By D. A. PERIGO

"Coming Up — Christmas Traffic"

Now is the time to plan to find out what happens in your toll centers this Christmas. When the results are in, ask yourself this question — "Would premium rates on Christmas day reverse the trend created by reduced rates?"

FORTY FIVE more days — then Christmas with its traffic problems. If you do not operate a toll center the chances are you have had your subscribers tell you some of the problems they encountered on Christmas with the company which does your toll centering. If you do operate a toll center you will be interested in the results of a study made in one toll center on Christmas 1958.

No claims are made that the toll center studied is representative of all offices, for we believe some are worse — and others not so bad. The study is presented for the purpose of getting the managements of *all* telephone companies to view the Christmas traffic problem in the light of present day conditions rather than those which existed in the depressive 1930's.

The toll center studied has a local dial system and eight dial operated tributaries (CDO's). Two of the tributaries have Extended Area Service to the toll center and to each other. It has nationwide operator toll dialing and almost all of the incoming traffic is dialed direct.

A "Christmas Traffic Comparison" is a part of this article. The tabulation speaks rather loudly for itself. There are, however, a few points for discussion.

The first point is that under the heading "Intrastate" we find the Christmas traffic very close to a normal holiday or Sunday. By contrast the "Interstate" columns are a long way from normal. We conclude from this that the Interstate traffic causes the problem.

The second point concerns the reason for showing an "Alternate Method" at the bottom of the tabulation. In the main portion of the table the Cost per 1000 Units on Christmas Day is shown as $29.69. This includes an additional day's pay for each operator who was working. We believe this is proper because the $13.54 shown for the month of December includes not only the additional day's pay for those working but also for those who did not work.

For those who believe this is a fallacy, we have shown the "Alternate Method" which deducts a day's pay for each operator who worked on Christmas Day. Either one proves the costs of handling Interstate Christmas traffic are definitely out of line — the only difference being one of degree.

The third point is that a part of the increase in Interstate tickets is due to the operating practice on delayed calls under which the customer is asked to place his call again instead of the operator offering to try it at a specified time. We believe this is a good practice when the cause of delay is beyond the company's control such as "Don't Answers" and "Busies." It is questionable as to whether it should go beyond an option when the delay is caused by

CHRISTMAS TRAFFIC COMPARISON

	Intrastate			Interstate			Total		
	Average Weekday	Christmas	% of Avg. Weekday	Average Weekday	Christmas	% of Avg. Weekday	Average Weekday	Christmas	% of Avg. Weekday
Tickets Written	2,740	1,480	54.0	360	2,060	572.2	3,100	3,540	114.3
Messages (completed calls)	2,220	1,110	50.0	300	790	263.3	2,520	1,900	75.4
Traffic Units	25,100	12,110	48.2	5,800	28,100	484.4	30,900	40,210	130.1
Units per Message	11.3	11.0	97.3	19.3	35.5	184.0	12.3	21.2	172.4
Cost per 1000 Units							$13.54*	$29.69	
Operator Wages per Message	$0.15	$0.32	213.5	$0.26	$1.06	407.7	$0.17	$0.63	370.6
Additional Cost per Message		$0.17			$0.80			$0.46	
Ticket Value	$1.50φ	$1.08	72.0	$3.49φ	$2.98	85.4	$2.33φ	$1.87	
Reduction in Ticket Value		$0.42			$0.51			$0.46	
Additional Cost + Reduced Value		$0.59			$1.31			$0.92	
ALTERNATE METHOD									
Cost per 1000 Units							$13.54*	$17.61	
Operator Wages per Message	$0.15	$0.19		$0.26	$0.63		$0.17	$0.37	
Additional Cost per Message		$0.04			$0.37			$0.20	
Additional Cost + Reduced Value		$0.46			$1.17			$0.66	

* For entire month of December including Sundays and holidays.
φ Value of Christmas messages at full price.

company failure — and normally a shortage of circuits is a company failure. We agree, however, that on Christmas Day there are unusual conditions and we should *urge* the customer in his option.

Fourth, the percentage completion has no significance, but the reasons for non-completion are important. On a normal business day 90% of the cancellations in this office are due to "Don't Answer" and "Busies" (again due to the practice) while on Christmas Day 80% of the total cancellations were due to "no circuit" on Interstate calls.

Fifth, the tabulation covers only the Operator Wage Account (624) costs. There are many others — planning the circuit layout, physically changing the layout (and back again), formulation of special practices, and the training of thousands of operators — to mention a few.

We do not question the decision to establish reduced rates for Christmas traffic which was made in the 1930's — but we most certainly feel that as we enter the 1960's we should do so on the basis of conditions as we see them now.

Reduced rates on Christmas do not make use of plant that would otherwise be idle, as night and Sunday reductions do. In effect, we build a special plant for Christmas traffic, and, therefore, charges should be higher rather than lower.

The Independent companies who settle their toll with the Bell System on a *Cost basis* are compensated for losses such as shown in this study. Whether those who settle by other methods are suitably compensated could possibly provoke some argument.

There are those who say Christmas reductions make better public relations and advertise the use of long distance. The sale of goods which cannot be delivered destroys public relations, and certainly the kind of service encountered on Christmas would not be very attractive to the new user.

We've been promising ourselves for years to find out how many of the people responsible for tariffs, public relations, and advertising copy have ever spent Christmas Day in a representative toll center. We think responsible management people owe it to themselves to see what central office traffic people go through on Christmas Day. We suggest, however, that you keep out of their way, make notes of your questions — then refer them to Traffic a couple of days later.

The Author, D. A. PERIGO, is general traffic supt., West Coast Tel. Co., Everett, Wash.

Now is a good time to set up plans to find out what happens in your toll centers this Christmas.

Would the introduction of premium rates on Christmas Day reverse the trend created by reduced rates? What's wrong with such a solution? Do you have a better one? — *D. A. Perigo.*

Communication Towers

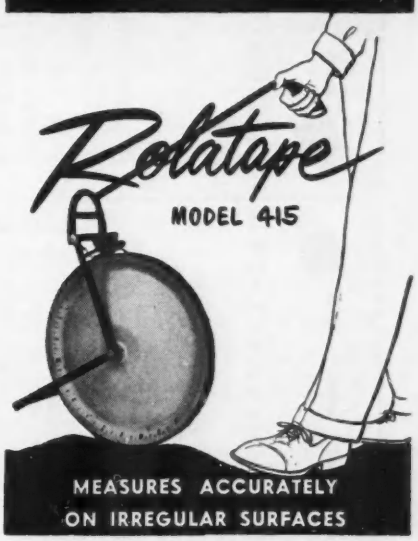
THE COMMUNICATION Tower Catalog of Rohn Manufacturing Company has been greatly expanded to include complete engineering details and structural data on Rohn Communication Towers.

The material will prove extremely helpful and valuable to users of communication tower equipment. Purchasers, engineers and staff members using towers and needing such information are urged to get a copy of this complete engineering data catalog together with the tower specifications. Contact any Rohn coast-to-coast representative or write to *Rohn Manufacturing Co.,* 116 *Limestone Bellevue, Dept. TE&M, Peoria, Ill.*

It's New!

NOW–AT LAST A MEASURING WHEEL THAT MEASURES ACCURATELY TO A FRACTION OF AN INCH!

Rolatape's amazing new Model 415 meets all your measuring needs — measuring quickly and surely over the most uneven and irregular terrain with no risk of human error. This time-saving instrument is calibrated to measure accurately in full view of operator as it is rolled along, giving measurements in inches (to ½ inch) on one side of measuring wheel, and tenths of a foot (to .5 of a foot) on the other. Sturdy and lightwight, it is equipped with automatic brake and built-in stand. Handle folds compactly. See one at your dealer's today.



MEASURES ACCURATELY ON IRREGULAR SURFACES

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ROLATAPE Inc.
1741 14th Street, Dept. TE-11
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Send me free details on ROLATAPE:

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TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S 'SPEC' BOOK

(7) Cable Pressurization Procedures

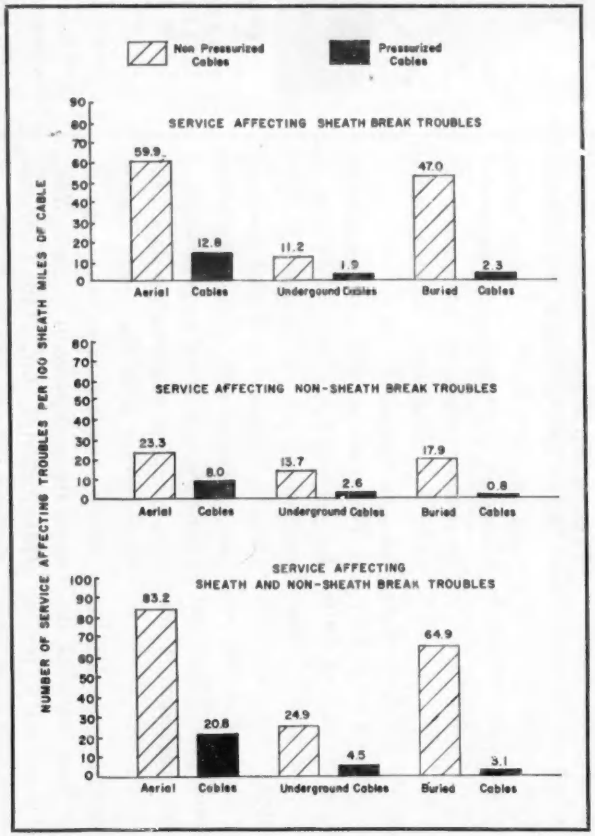


FIG. ONE: — Analysis of service troubles experienced with pressurized and non-pressurized cables.

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S 'SPEC' BOOK

(8) Cable Pressurization Procedures

According to the experience of one telephone company, in an actual comparison of a group of pressurized and non-pressurized cable, it was found that it had an average of 58 service-affecting troubles per 100 miles of cable during the period of study. Over a like period, the company had only 9-1/2 service-affecting troubles per 10 miles of pressurized cable, an 83 percent reduction in the number of trouble cases since the cable was pressurized.

The data obtained in the study is analyzed in the chart shown in *Figure* 1. From this data, it will be noted that not only a substantial reduction of service troubles from sheath breaks was obtained, but also there was a large reduction in a number of service troubles associated with conductors, insulation, and loading coils.

Another important fact in the analysis was that on the non-pressurized cables only 19 potential sources of troubles were found by routine inspection or alarm in each 100 miles of cable. On the other hand, 60 cases of trouble were found in each 100 miles of cable which were detected by routine alarm and excessive air consumption, an increase of 318 per cent. Such routine faults can be repaired on a maintenance basis during normal working hours, avoiding the need for overtime work.

The discovery of potential trouble by the alarm and pressure loss indications is particularly important in those areas with long periods of dry weather followed by rainy seasons. During the dry seasons there are few service disruptions caused by moisture entry, but the first heavy rains are accompanied by epidemics of service troubles due to incipient sheath

TELEPHONE ENGINEER & MANAGEMENT'S

PLANT MAN'S 'SPEC' BOOK

(9) Cable Pressurization Procedures

breaks that had gone unnoticed, suddenly taking in moisture, thereby requiring high maintenance and repair charges particularly on an overtime basis to restore service.

Other Economies

Besides the reduction in the time of cable splicers spent on repairs of cable sheath openings that admit moisture, there is also a considerable reduction in the time of testmen, switchmen, trouble operators, and clerks in handling records pertaining to the trouble cases resulting from moisture entering the cables. Particularly in the larger exchanges, more time and effort is expended in handling the records than in actually correcting the conditions causing the moisture entry and repairing the sheath breaks.

Considering a typical procedure in a larger telephone dial exchange, each telephone line affected by moisture entering a cable has to be tested by a switchman and "Pg'd" to take it out of service. This man then reports the number of the line involved to the trouble operator. The operator records the telephone number on her complaint record, prepares a trouble ticket, removes the subscriber's card from her file and forwards the card and ticket to the testboard.

When the trouble has been cleared, the testman tests the lines that were affected, calls the particular central office involved, and has the lines restored to service. He then records the necessary trouble information on the subscriber's cards and returns them to the trouble operator who records the final details of the trouble on the complaint record and refiles the card.

More Data For Your "Spec Book" In The Next Issue.

More Data For Your "Spec Book" In The Next Issue.

COMMERCIAL DEPARTMENT NOTES

by ALLAN R. STACEY

"Prewiring Boosts Phones Per Home"

There are two fertile fields for a prewiring program: (1) in multiple family units, and (2) in tract development of single family premises where one builder constructs several houses.

ONE OF THE relatively newer terms in our business is "prewiring." In the past this word has been used to describe the occasion when the telephone company had a shortage of central office facilities or cable facilities but went ahead and wired the subscriber's premises in advance of the date of connecting the service. In this case the house or premises of the subscriber was completely ready for use but the telephone facilities were not.

The term is being applied today in another way under which the telephone company may or may not be ready for complete service but the subscriber's premises are obviously far from ready for occupancy. We discussed this matter briefly in the column of August 15, 1959 but because of widespread interest in this question, let me describe some of the results achieved from a planned program of wiring in telephone outlets to residential premises while they are still in the framing stages.

You may have read of Builder Howard Quinn of Chicago who constructed 200 new homes in one development and each of these homes had no less than ten telephone outlets. It is certainly fine when a builder is willing to put ten outlets into a home at his own cost though we usually find that few builders can be persuaded to do this. The next best thing is for the telephone company to put several outlets in at its cost or upon a cost-sharing arrangement with the builder.

I can see two good reasons for every telephone company being interested in a prewiring program providing there is tract or multiple housing development within its area. First, all of us should be doing as much as possible towards a long range objective of educating the public to accept *and expect* multiple telephone outlets in the average home. Second, there can be impressive short range results in improved sales per premise. In other words, you get more telephones into each house as a result of prewiring.

I can see two fertile fields for a prewiring program: in multiple family units and in tract development of single family premises where one builder constructs a quantity of houses.

The author, ALLAN R. STACEY, is vice-president of the Sunland-Tujunga Tel. Co., Sunland, Calif.

At the moment it does not appear that expanding this program to include single family dwellings on isolated lots within the exchange would be productive enough to justify the cost unless the subscriber shares in that cost by a tariff rate payment at the time of the prewiring as well as a service connection charge at the time of telephone installation. The where to do it, then, is answered by starting in multiple family dwellings and in tract developments.

The "how to" consists of the telephone company originating a contact with the builder-owner of the multiple or tract and either persuading him to install several telephone outlets at his cost or, if this is not possible, making the installation at the telephone company's expense. This cost presumably will be recovered by later tariff service connection charged to the user of telephone service at this premise.

A light construction crew or even one man can coordinate with the electrical wiring contractor for the tract and, at appropriate times during the framing stages, install outlets and make wire runs so that when the plasterers come along everything is concealed for telephone service and the house is ready to go with multiple telephone outlets. Some companies actually pull in the wire at this stage and other companies merely leave a fish wire or provide some other simple method of pulling in the telephone wire when it becomes necessary.

Helping The Service Representative

ONCE THE tract has been completely wired and before the houses are sold, an information package is prepared and distributed to the business office service representatives so that they know precisely what to say to each applicant for new service in that tract.

The best brochure of this type that I have seen consists of several pages, 8½ x 11, bound inside a cover upon which is inscribed the name and location of the tract. The first inside page shows the streets and the lots involved complete with street address. This is a plot plan in simplified form.

The next several pages contain the

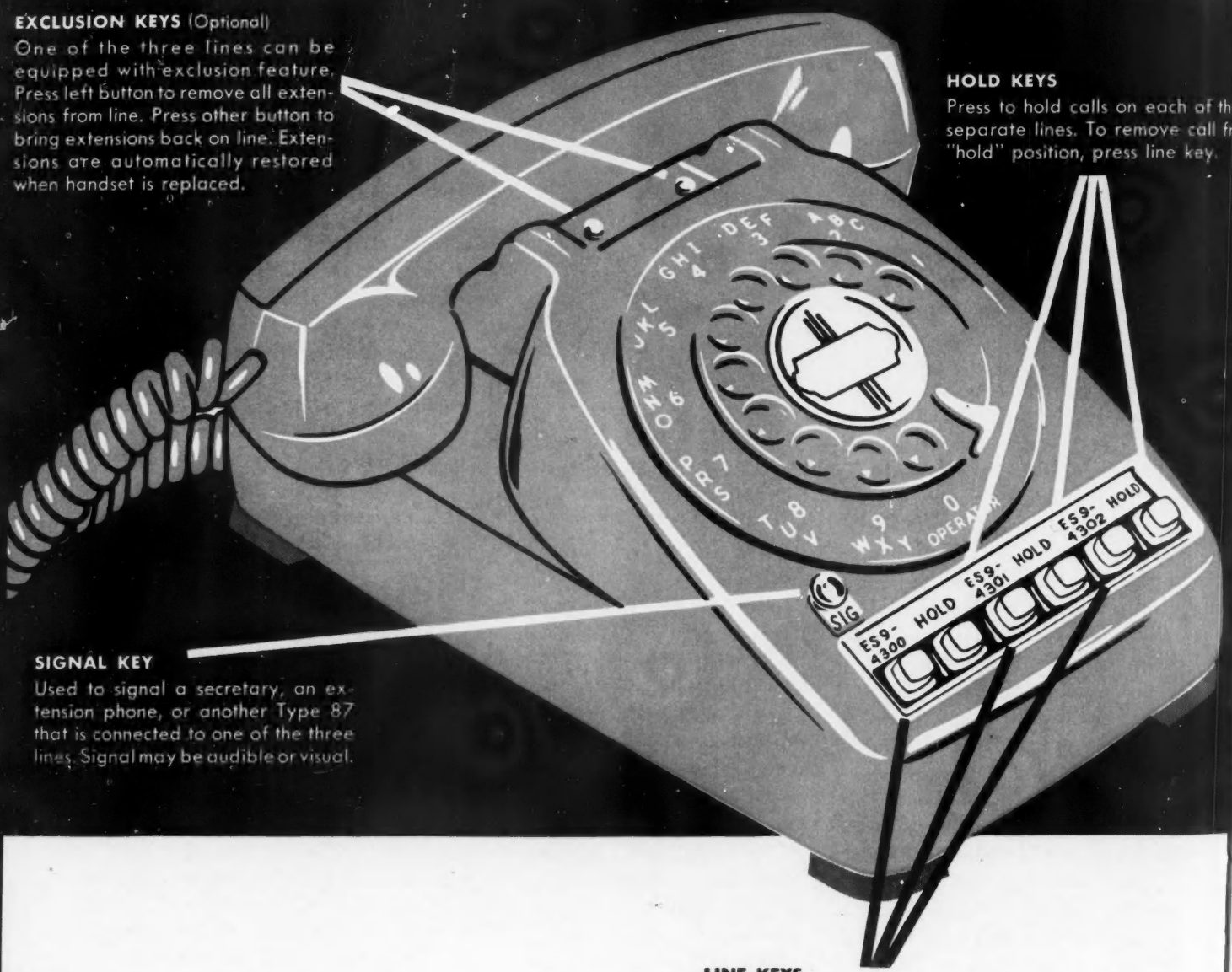
NOW YOU CAN OFFER B

MULTI-LINE

New Type 87 Telephone..a 3

EXCLUSION KEYS (Optional)
One of the three lines can be equipped with exclusion feature. Press left button to remove all extensions from line. Press other button to bring extensions back on line. Extensions are automatically restored when handset is replaced.

HOLD KEYS
Press to hold calls on each of thre separate lines. To remove call fro "hold" position, press line key.



SIGNAL KEY
Used to signal a secretary, an extension phone, or another Type 87 that is connected to one of the three lines. Signal may be audible or visual.

LINE KEYS
Press to select line or answer incoming call. Lights in keys flash on incoming calls.

BUSINESS SUBSCRIBERS

SERVICE AT LOWER COST

...a 3-line phone for small offices

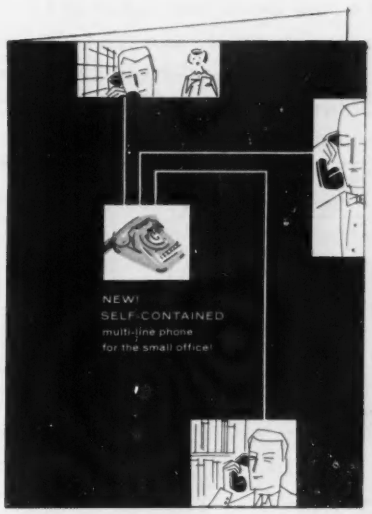
Type 87 is a multi-line phone—with an important advantage. Now—with Type 87—you can offer small business subscribers the economy and efficiency of multi-line service at *lower cost.*

Why is Type 87 lower in cost? Because it's completely self-contained. All control equipment is *inside* the phone. And Type 87 is modern-looking, too. It has the streamlined beauty of our Type 80. Naturally, your prospects can choose from 10 decorator colors.

Who are your prospects? Any subscriber who needs less than 10 phones with a maximum of three outside lines. The list is almost endless—auto dealers, doctors, lawyers, retail stores, jobbers, etc. Even large firms with PBX switchboards will find the Type 87 a valuable supplement within departments.

Look at the opposite page. See how easy—pushbutton easy—the Type 87 operates. And keep in mind that it's adaptable to many different needs.

You can sum up new Type 87 telephone in four words: *more revenue for you!*



SEND FOR DESCRIPTIVE CIRCULAR

For detailed information on the new Type 87 phone, ask for Circular 1934. Write: *Automatic Electric Sales Corporation, Northlake, Illinois.* Or, *call Fillmore 5-7111. In Canada, Automatic Electric Sales (Canada) Ltd., Toronto 16.*

AUTOMATIC ELECTRIC GENERAL SYSTEM

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

various floorplans available to the purchasers within that tract. For example, the first page might include a floorplan as outlined in *Exhibit One.* You can see that this floorplan shows a two bedroom and den home with two baths and a kitchen with a contiguous dining area. In addition, this floorplan shows by pictures of instruments the location of four prewired outlets within the house that this particular applicant has purchased.

While it does not show in *Exhibit One* the telephone locations are telephone pictures in color in order to suggest colored instruments for the applicant. You can see then that it is an easy matter for the service representative to point out that a telephone outlet already exists in the kitchen and would be an ideal location for a beige wall handset; that the bedroom has a telephone outlet suitable for a night instrument right by the bedside; that the den is already wired for a green telephone to match the den furnishings and that bedroom #2 has a telephone outlet wired to satisfy the needs of the teenage daughter in the family.

Other sheets within the same brochure show the remaining floorplans that are available within the tract so that any applicant can be shown his own floorplan and the service representative can make recommendations specific to his needs.

What Does Prewiring Cost?

COSTS OF prewiring telephone outlets during framing stages of houses seem to run between $3.00 and $5.00 per outlet. You will recognize that this varies with local circumstances. If it is possible to persuade the builder-owner to share in these costs, naturally the operating telephone company is further ahead. However, in any event, the experience seem to be that enough additional service is sold at these prewired premises to offset the costs of prewiring.

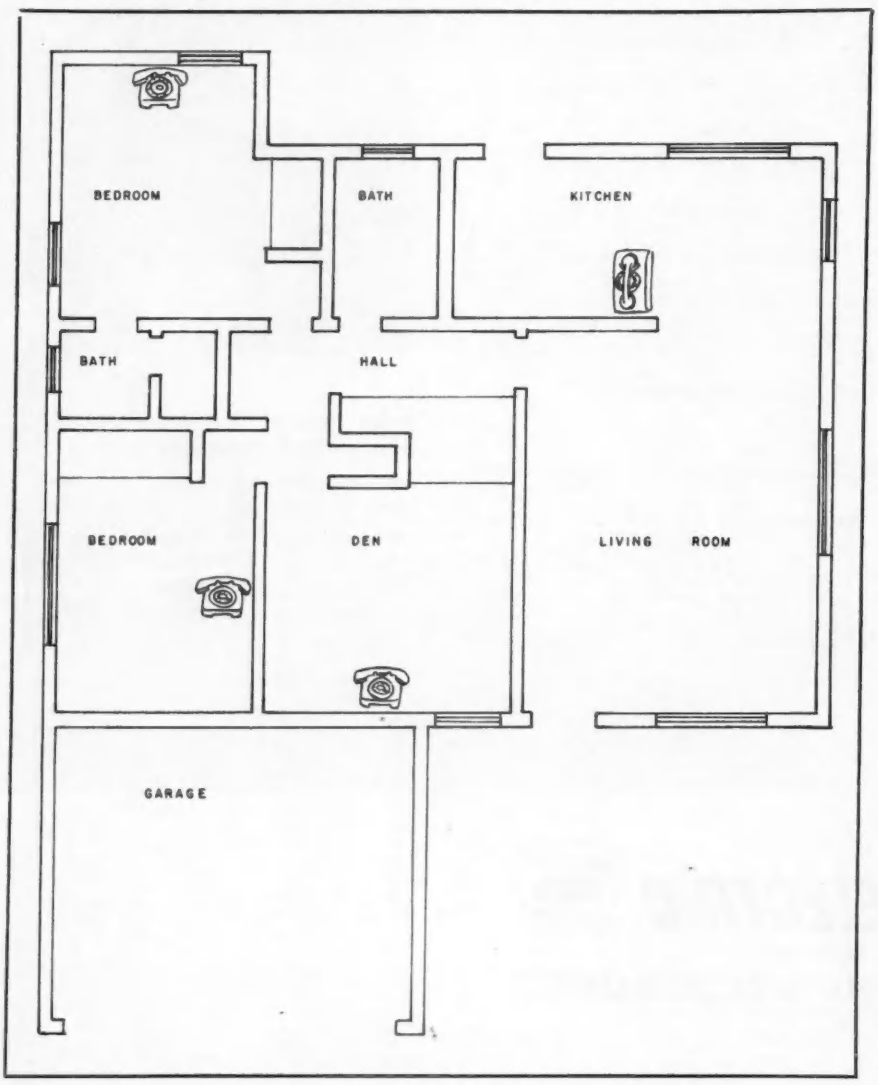


EXHIBIT ONE: — Floor plan shows prewired outlets.

Additional Telephones Because Of Prewiring

AS AN illustration of the revenue increase derived from prewiring, let us examine one tract consisting of fifty-four prewired houses. Shortly after this tract was opened and occupied, forty-six houses had service. The forty-six services were divided into two groups in order to judge the effectiveness of the brochure mentioned above.

On one group of fourteen houses, the brochure was not used by the service representative and in this group four applicants ordered one additional telephone while ten would take only one telephone in the house. With this group the service representative did not emphasize the prewiring that existed. In this group of eighteen telephones, thirteen were color and five were black, or a color development of 72% of total telephones.

In the second control group of thirty-two premises, there were nine houses with one telephone, eighteen houses with two telephones and four houses with three telephones. This totaled fifty-seven telephones and of these fifty-seven, forty-five or 79% were in color.

It is interesting to note that on the second group where the service representative used the floorplan brochure, there were four premises that accepted three telephones and eighteen premises that accepted two telephones. In other words, the multiple telephone premises totaled twenty-two out of thirty-two (69%) in the second group and four out of fourteen (29%) in the first group. Apparently, use of the floorplan brochure by the service representative markedly increased the total telephones installed under the prewiring program. In addition, the sale of color was higher in the instance where the floorplan brochure was used.

Next issue we want to talk about reactions to the USITA Convention. We'll be seeing you then. — *Allan R. Stacey.*

PLANT NOTES ON NEW DEVELOPMENTS

by JOHN S. REED

"Commswitch Installed at Vandenberg"

New device senses noise, distortion, or other undesirable conditions existing along a telephone line and automatically switches the conversation to another line, assuring uninterrupted communication.

New Electronic Device Senses Line Trouble

A NEW ELECTRONIC device assures uninterrupted voice communication over telephone lines by sensing noise, signal distortion, or other undesirable conditions existing along the line and switching the conversation automatically to a second line. The device termed "Commswitch" (Communications Failure Detecting and Switching Equipment) has been installed at Vandenberg Air Force Base, California, for use in connection with launching of Atlas missiles. The equipment may be modified for other military or commercial use.

JOHN S. REED, TE&M's technical editor, is plant methods supervisor, Lincoln (Neb.) Telephone & Telegraph Co.

In use, two Commswitch units are employed, one at each end of the line. The voice signal or other information may be transmitted in either direction simultaneously. An incoming voice signal with a frequency of 250-2800 cycles per second enters the first Commswitch from the transmitting subscriber set and is split into two paths by a hybrid which separates the signals in one direction from those in the other direction. Frequencies above and below 250-2800 cps are filtered out.

One signal is sent directly along the line to a hybrid in the second Commswitch, where a test sample is extracted and the rest sent on to the receiving subscriber set. The sample signal extracted in the first Commswitch is amplified and sent to a special envelope detector which filters from the 250-2800 cps signal a 0-50 cps envelope. This is used to modulate the output of 3100 cps oscillator in the first Commswitch.

The modulated oscillator output is employed as a checking tone signal and is sent along the same line, with the original voice signal, to the hybrid in the second Commswitch. From the second hybrid three signals are obtained: the original voice signal with a frequency range of 250-2800 cps going to the subscribers; an extracted sample of this signal for testing; and the 3100 cps checking tone modulated by a 0-50 cps signal.

The envelope detector utilizes the fact that the voice signal, over a period of time, may contain all frequencies between 250-2800 cps at any amplitude permissible by the line and, at any instant, the signal contains many of the frequencies in the 250-2800 cps range at differing amplitudes.

These frequencies are being modulated at a syllabic rate by the voice. A filter network selects all the syllabic frequencies between 0-50 cps and filters out all other frequencies. The amplitude and frequency of each of these syllabic frequencies appearing in the 0-50 cps range may then be utilized as a comparative index.

At the hybrid in the second Commswitch, the original voice signal is passed along to the listener. The sample of the voice signal extracted for testing and the checking tone are fed into filter networks. A low pass filter passes the voice signal test sample (250-2800 cps) and blocks the syllabically modulated test carrier. A 3100 cps bandpass filter passes the test carrier (modulated by the 0-50 cps signal) and blocks the voice test signal. The test carrier is then amplified and fed into one section of a comparator.

The extracted voice test signal (250-2800 cps) is used to create a new test carrier which, in turn, is fed into another section of the comparator. The signals are then compared and fed into a logarithmic detector.

However, the second signal is derived from signals which have already passed along the line in the 250-2800 range. When interference or distortion exists on the line, this second signal will contain new corresponding voltages because it passed along the line as the modulation on a 3100 cps carrier and this carrier lies outside the 250-2800 range.

If the line has no noise or distortion, the output of the log detector is zero, indicating that the line is in good condition. If the line has noise or distortion, the condition is reflected in a difference-voltage that is proportional to the amount of degradation on the line.

If the degradation exceeds a value selected on a sensitivity control in the Commswitch at the end of the line where the signal is being received, a logic circuit is arranged to

SUPERIOR
INSIDE WIRING
CABLE

- **Multiple conductors paired and fully color-coded**
- **Lightweight**
- **Plastic-insulated**

Superior's Inside Wiring Cable is economical, efficient and easy to install.

Conductors are insulated with a tough vinyl compound . . . heat and water resistant and unaffected by humidity. Has high resistance to crushing and cold flow.

Easy to terminate . . . simply strip insulation.

Cross talk is minimized due to systematic varying lays of pairs.

Special vinyl jacket provides excellent protection for all inside wiring conditions.

For details, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
Hickory, North Carolina

3142

indicate a primary line trouble, whereupon a switchover to the alternate line occurs and an alarm is sounded.

In the Commswitch operation, the alternate line is monitored by a checking tone transmitted from a tone oscillator to a tone receiver and a noise receiver at the other end of the line. The output of these receiver circuits is fed into the same logic circuit arrangement as that fed by the output of the log detector. If the tone or noise varies from pre-set levels, the logic circuit notes the variance, sounds an alarm and lights an alternate failure indicator. The Commswitch will not switch to a defective line.

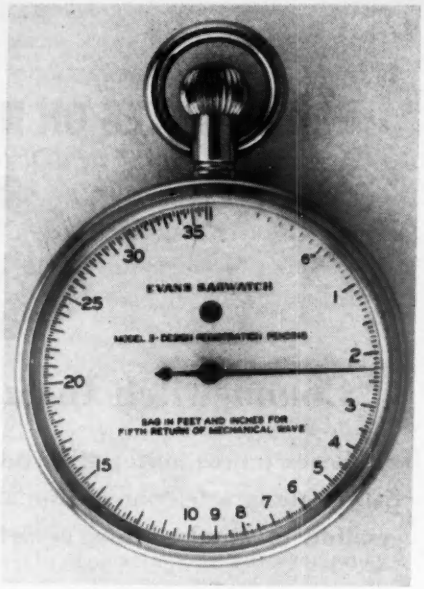
In explaining the Commswitch operation a one-way voice communication was assumed. In actual operation two-way communication exists and a 0-50 cps signal for transmission in the opposite direction is derived from a second envelope detector in the second Commswitch. This signal is used to modulate a 3400 cps carier. In other respects, operation in the reverse direction is identical.

Sagwatch Reads Wire Sag Directly in Feet and Inches

THE STANDARD method of determining wire tension in placing an open wire line is to measure the sag of the wires in one or more spans, employing the sighting method. The amount of sag is a measure of the tension in the wires.

Another method is to strike a wire near its insulator with the hand and count the number of oscillations or return waves as the wire vibrates over a specific period of time. The number of oscillations in the period depends on the wire tension. A table gives the relation between the number of oscillations in 15 seconds and the wire sag.

The method of counting oscillations is slow and subject to errors, and within recent years use has been made of the fifth return wave. A stop watch is employed and the number of times the wire flips under the hand (or a rope held over the wire from the ground) is counted. When the fifth wave is felt, the watch is stopped and the time required is noted. A table is consulted to determine the corresponding wire sag.



Evans Sagwatch designed for reading wire sag directly in feet and inches. (Kirk Dial and Crystal Company.)

By using a special stop watch with face graduated in feet and inches, there is no need to consult an oscillation table every time a reading is taken. The method works regardless of the size of line conductor and it is only necessary to know what the sag should be for a given span length and wire size and kind as listed in standard sag tables.

The special stop watch has its face graduated logarithmically from 0 to 35 feet. The reading is obtained by striking the conductor a sharp blow close to one support, and simultaneously starting the watch. A mechanical wave will travel to the far support and be reflected, passing back and forth repeatedly while gradually diminishing. On the fifth return of the wave the watch is stopped, and sag is read directly.

The impulse to the wire can be given by a man on the pole using a mallet or a gloved hand, and the returning waves either be felt by hand or seen by eye. Or, if preferred, the impulse can be set up by tugging on a light cord held from the ground, and the returning waves felt through the taut cord.

"Guaranteed for Life" Tags

WHERE A CUSTOMER purchases an electrical appliance, he expects to pay for servicing of the

appliance in case of breakdown or wear and tear. He expects to replace it with a new and more modern item when it wears out or becomes outmoded.

An entirely different arrangement results when the customer orders telephone service. Here he receives not only a telephone instrument, but a guarantee that he never need pay for its replacement when it is worn out or becomes antiquated. He receives an ever better grade of service as the state of the telephone art improves, paying only the monthly charge (plus installation or move charges when required). In effect, the installation of a telephone carries lifetime guarantee of good telephone service.

Plant men of Illinois Bell Telephone Company are reminding customers that their telephone service carries a "lifetime guarantee." Installer-repairmen emphasize this part of the telephone's value by attaching a newly developed black and gold tag to the customer's telephone on every visit. The tag is attached to the telephone cord or finger stop on the dial. It contains the following information:

THE GUARANTEE THAT NEVER RUNS OUT

This telephone will be repaired whenever necessary without extra charge. This applies, with normal use, whenever needed to maintain good service. Just call "Repair Service." We want all telephones and associated equipment to give you trouble-free performance. That's one reason telephones remain our property and are not sold to customers. It's the service you buy, and it's our responsibility to maintain that service forever . . . with no "service call" charges!

This is a unique guarantee, rarely mentioned or thought of, but always in force. It is one of the features that makes your telephone an outstanding value in modern living.

Besides telling the lifetime guarantee story, the message is also intended to gently remind customers that the telephone instrument belongs to the company.

New Process For Making Synthetic Ferrite Monocrystals

A METHOD of transforming a few cents worth of a rust-like substance into a nearly perfect crystal worth hundreds of dollars to the electronics industry has been announced by International Telephone and Telegraph Corporation. According to Dr. C. D. W. Thornton, ITT Laboratories vice president, various types of crystals have already proved to be "workhorses" of electronics in devices ranging from transistor radios to radar stations and radio telescopes. The new process now opens promising avenues in electronic research by making available in quantity and size more nearly perfect ferrite monocrystals with which scientists have been anxious to experiment.

The rare crystals are synthesized from a mixture of ferric oxide, a form of common rust, and other oxides.

A typical crystal, grown by a process known as "flameless fusion" and developed by ITT Laboratories, Nutley, N. J., was recently displayed by the ITT Components Division at the 1959 Western Electronics Show and Convention at the Cow Palace in San Francisco. The crystal is approximately 1 1/2 inches long and 3/4 of an inch in diameter.

At the Electronics Show and Convention, Frank M. Viles, vice-president of the ITT Components Division, explained that the many kinds of crystals used in electronic components have either of two kinds of structures — polycrystalline or monocrystalline. Devices composed of polycrystalline ferrite have well-known and valuable properties, but the anticipated unique properties of monocrystalline ferrites have been beyond the reach of scientists because such crystals existed in nature only in minute quantities and sizes, and artificial high quality synthesis of them has been difficult.

In ITTL's flameless fusion, a thermo-chemical reaction is accomplished by using high frequency radio energy in a small metal loop to generate high temperature. A specially prepared powder is sifted through the loop and is heated in passage to approximately 2000°

Stewart

TEST EQUIPMENT

Locates Trouble FAST

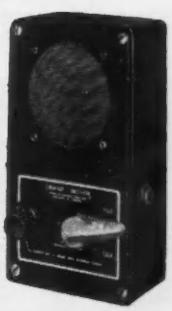
Stewart Full Transistor VOLTMETER MODEL TR

For portable and field use. Accuracy and stability are combined in this laboratory instrument.

NO TUBES—A completely transistorized Unit,, economical in battery consumption. Requires no warm-up time.
High stability is achieved by two independent feedback loops, precision resistors and printed circuit wiring. High input impedance and freedom from fluctuations, hum and capacitance of power lines save time and assure better testing.
—50 DBM to +50 DBM, 11 ranges in RED. .003 to 300 volts, 11 ranges, in BLACK. Input impedance, 2 megohms shunted by 25 micro-microfarads. Accuracy 5% of full scale, 100 cycles to 500 KC. Self contained 500 hour battery. Aluminum Case. SIZE 6½" x 4" x 3". Wt. 2 lbs.

COMMUNICATION UNIT

MODEL M — Two Units make a complete intercom system. Each one a master unit.
Enables point of work communication in checking and aligning equipment.
Each a transistor powered amplifier with combination transmitter - speaker, self contained batteries and switching. Unit puts +3 DB on line, —12 DB from line puts out sound sufficient to be heard many feet distant.



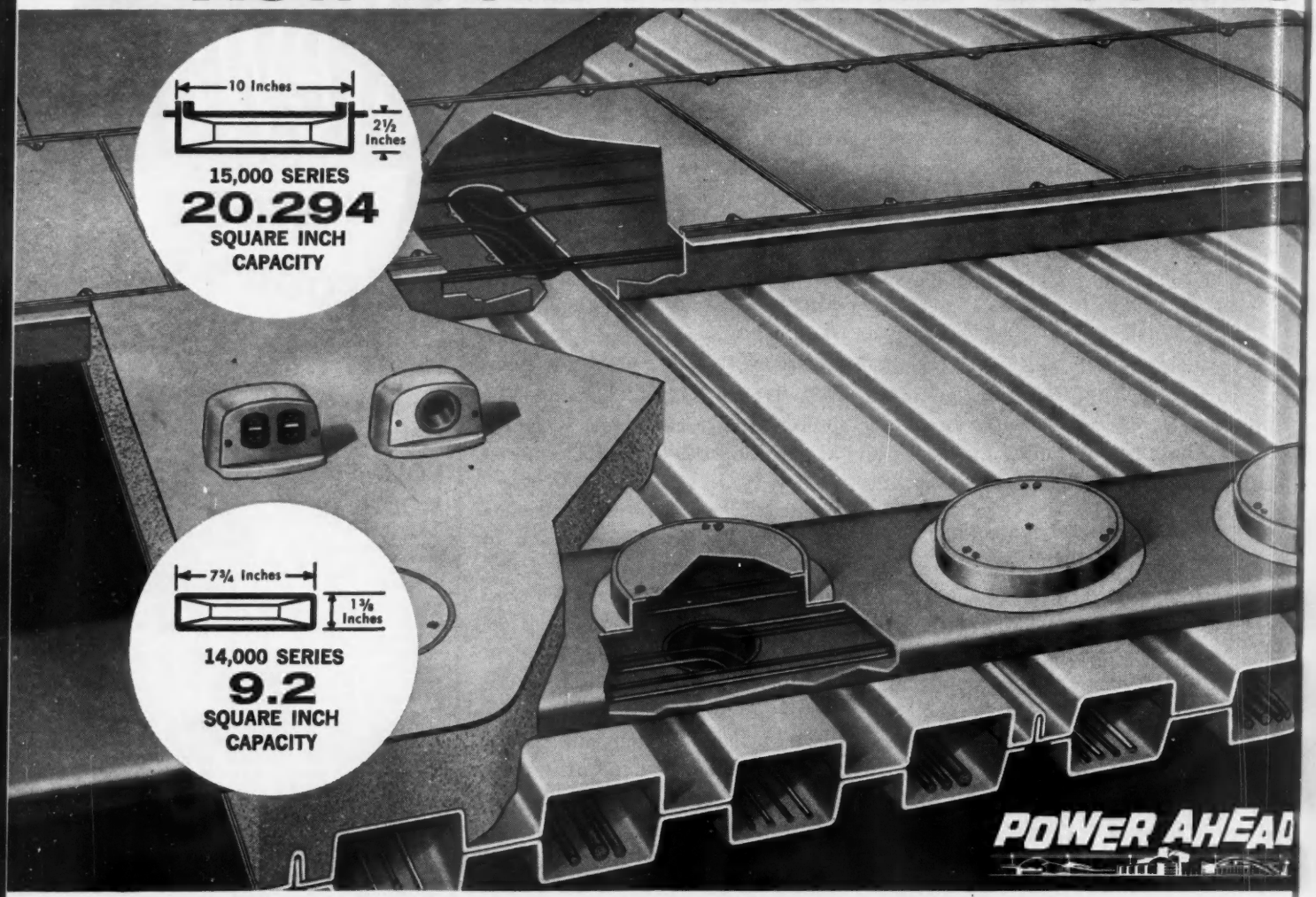
STEWART LOCATOR TESTER

MODEL A — The complete Unit for locating grounds, shorts, wet spots and other faults in cables. In addition will locate and determine the depth of buried pipe or conductor.

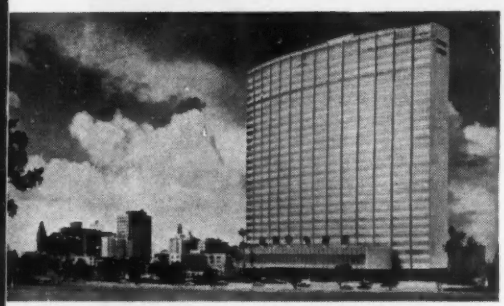
Speed Cable Tester results by using the EXPLORING COIL AMPLIFIER MODEL E. Increases headphone tone more than 100 times. Pocket size.

STEWART BROTHERS
Division of Instrument Laboratories
315 W. WALTON PL., CHICAGO 10, ILL.

New from National Electric



TWO NEW STANDARD-DESIGN HEADERDUCT SYSTEMS NOW OFFER...



Selected for new $45 million Kaiser Center, Oakland, Calif. NE systems proved flexible enough to meet unique construction requirements and tremendous telephone feeder system wiring load. Welton Beckett & Associates, Architect and Consulting Engineers. Foothill Electric Company, Electrical Contractors.

New large capacity cross box for the 14,000 Series has 11¼ inch opening for access to cells. Adjustment for 2⅛ to 2⅞ inch concrete depth.

LARGEST CAPACITY DUCT AVAILABLE

- Greatest wire capacity of any Headerduct provided in a standard design
- Greatest wire capacity at all feed points
- Fast installation—easy fishing. Quick access to entire system
- Strongest service fittings of any system
- Attractive modernistic design of service fittings harmonizes with modern as w as traditional architecture
- Most complete line of telephone service fittings
- U/L listed for *all* approved cellular steel floors
- Application engineering available

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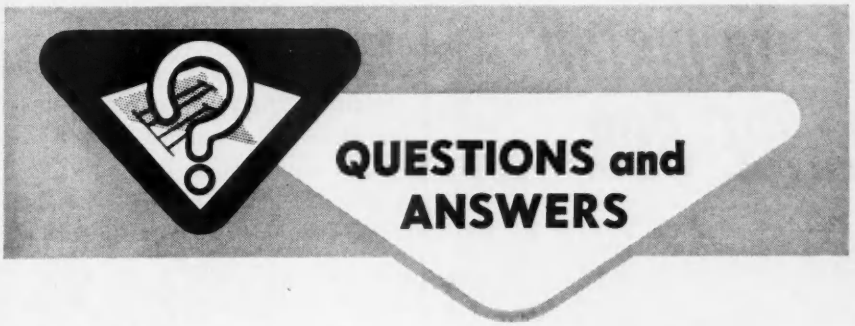

QUESTION: — *Why is adhesive backed aluminum tape used in wrapped splices on plastic jacketed cables?*

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(1) All ground connections at the ground bus bar should be checked to make sure the connections are tight. It is desirable to test the resistance to the ground to make sure that it has not gone high. This is quite important in small offices where ground rods or plates are used for the ground.

(2) All jumpers should be checked to make sure they are properly run inside all distributing rings in the route from one terminal lug pair to another and that they are not too tight or too slack.

(3) All terminal lugs should be examined for proper soldering of the wires to the lugs. The point of a knife may be used to test any connections that do not appear to be properly soldered. Where jumpers have been removed, the lugs should

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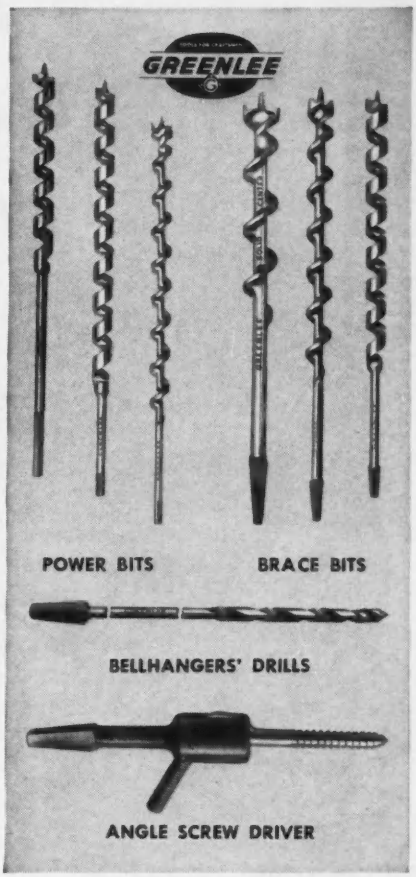

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be free from solder lumps. Short wire ends should not be permitted to be left on the lugs. Where any of these are found, the man responsible should be instructed to remove the jumpers by unsoldering and untwisting the wire ends wrapped around the terminal lugs, without cutting the wires.

(4) Protector blocks and heat coils should be checked to make sure they are the proper type and are in good condition. Dirty carbon blocks should be cleaned to remove carbon dust which would cause line noise.

(5) The supply box or cabinet should be checked to make sure that an adequate supply of protector blocks and heat coils is provided for use as needed. Tools used in main frame work should be in good condition. Resin-core solder should be provided for the soldering work. Soldering irons should be in good condition with properly formed and well-tinned tips.

(6) The storage of jumper wire should be neat and clean. Lengths of jumper wire should be stored on hooks or on small reels as preferred. The wire lengths should not be coiled up and thrown in a corner.

QUESTION: — *In wire plant maintenance, what is an economical procedure for inspecting the plant to locate defects?*

ANSWER: — The "T" or trouble zone inspection is an effective method of inspecting open wire or cable. Most of the defects in the wire or cable facility will be found at or near each pole. Your men should be instructed to examine carefully the crossarms, pole brackets, crossarm braces, bolts, nuts, guy attachments, insulators, wire ties, buffer protectors, and ground leads whenever a pole is climbed. In the case of a cable lead, the cable and cable terminal, where present, are examined for sheath breaks, holes, cracks, or crystallization. In each case, the inspection is made as far out from the pole as a man can reach in his safety belt along the wires or cable. Any defects found should be repaired or a memorandum made of the unsatisfactory conditions found for later handling.

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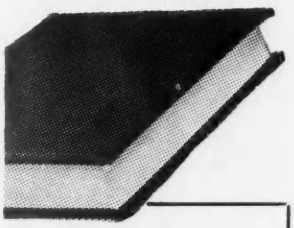

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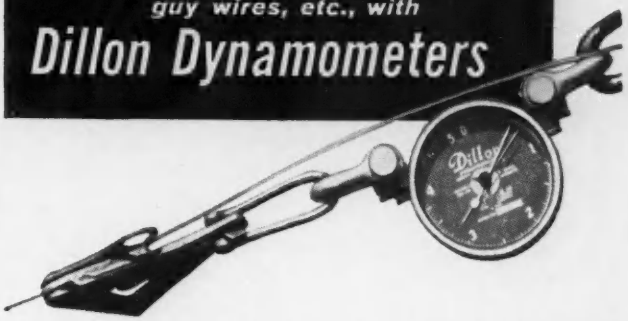

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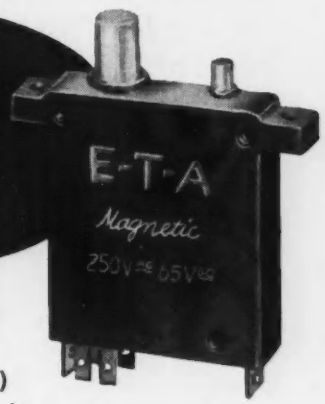

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A TE&M Laboratory Report

An All-Purpose Equalizer

Prepared By C. D. EHINGER

Part II of Mr. Ehinger's article reports results of a laboratory check of the Type 4B Program Equalizer which proves the provision of high-grade circuits, flat within specified limits, presents no difficult problem when the proper equipment is used. (Part I of this article appeared in the Oct. 1 TELEPHONE ENGINEER & MANAGEMENT.)

"The Type 4B Equalizer"

FOR THE purpose of illustrating and testing the equalization of a line, *Telephone Engineer and Management* contacted the Airtronics International Corporation, of Fort Lauderdale, Florida. This company was kind enough to send its type 4B program equalizer to the *Telephone Engineer and Management Lab* for checking and for the purpose of supplying a complete description of the equalization of a circuit similar to the one described in the hypothetical problem.

The Airtronics 4B is an "all purpose" equalizer for use as either a through-line equalizer or as a terminal equalizer. It can be used on non-loaded or loaded cable pairs. In the hypothetical problem under discussion, the Airtronics type 3A would be suitable for use at each central office and the type 1A would be suitable for use as a terminal equalizer at the Ajax main office.

Illustration A shows the equalizer mounted on a rack adapter plate which can be used for mounting two such equalizers. In the illustration, a blank plate is shown in the unused portion of the rack adapter plate. *Figure Three* is a schematic of the equipment contained in the 4B equalizer with the actual equalizer network shown only in a block diagram. The equalizer network is identical to that shown in *Figure Two.* (10/1/59 *TE&M, p.* 89.)

"Switch Functions"

ILLUSTRATION B is a front view of the unit showing the location of the switches and jacks detailed in *Figure Three.* Switch S_1 is a ganged switch which automatically selects the proper values of L and C for resonance at frequencies from 6 kc to 26 kc in 1.5 kc steps.

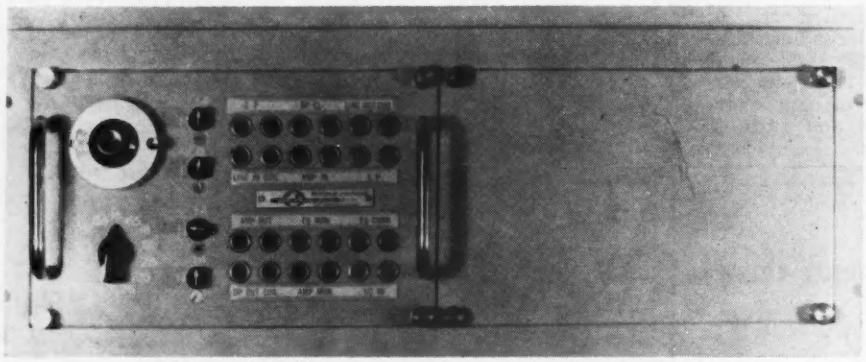
Values used are such that the proper L/C ratio is maintained for the usual applications. Switch S_2 is a two position switch which can place the line side windings of the 111-C repeat coil in either parallel or series operation. When the two halves of the coil are in series (1:1) the line is suitable for matching to a 600 ohm line while with the two halves of the coil in parallel (1:4) the repeat coil is suitable for matching to a 150 ohm line.

Switch S_3 performs an identical function for the drop side of the repeat coil and switch S_5 is also used for the same function on the line side of the coil, in event the equalizer is used as a through equalizer and must be matched to another outgoing line.

Switch S_4 is used to place the equalizer network across the line side of the repeat coil or across the drop side of the repeat coil. In nearly every case the equalizer will be used on the drop side of the coil; however, there are some instances where it is desirable to bridge the equalizer network on the line side in order to aid equalization at very low frequencies.

R is a precision potentiometer calibrated in steps of one ohm. This feature allows easy resetting to previously determined values when the unit is used for short term duty on a wide variety of dissimilar circuits.

Illustrations C and *D* are top and bottom views of the unit and show the placement of the various components used in the circuit. In the type 4B equalizer, two extra 187-A capacitors are provided for use in building out end sections in both directions from the equalizer, whenever it is used as a through-line type unit on circuits with program loading.



(A) — Equalizer mounted on rack adapter plate.

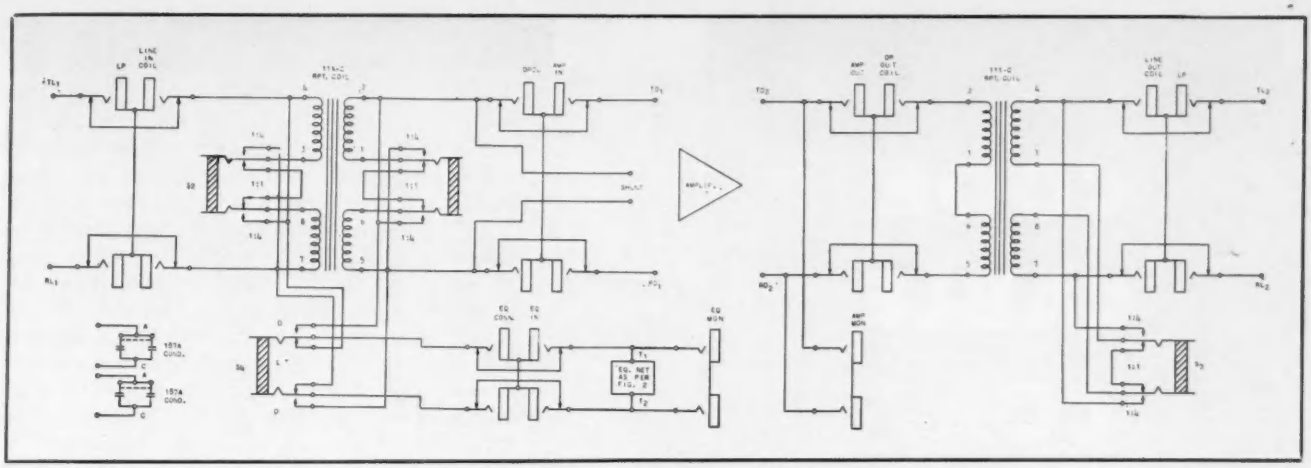


FIGURE THREE: — Schematic of 4B equalizer.

"Cabling To The Mainframe

ILLUSTRATION E is an end view of the unit showing the terminal block used for cabling purposes. It should be pointed out that, wherever possible, cabling from this unit to the mainframe should be kept physically separated from other office wiring and, if at all possible, should be run directly to the protectors of the cable pairs to be used.

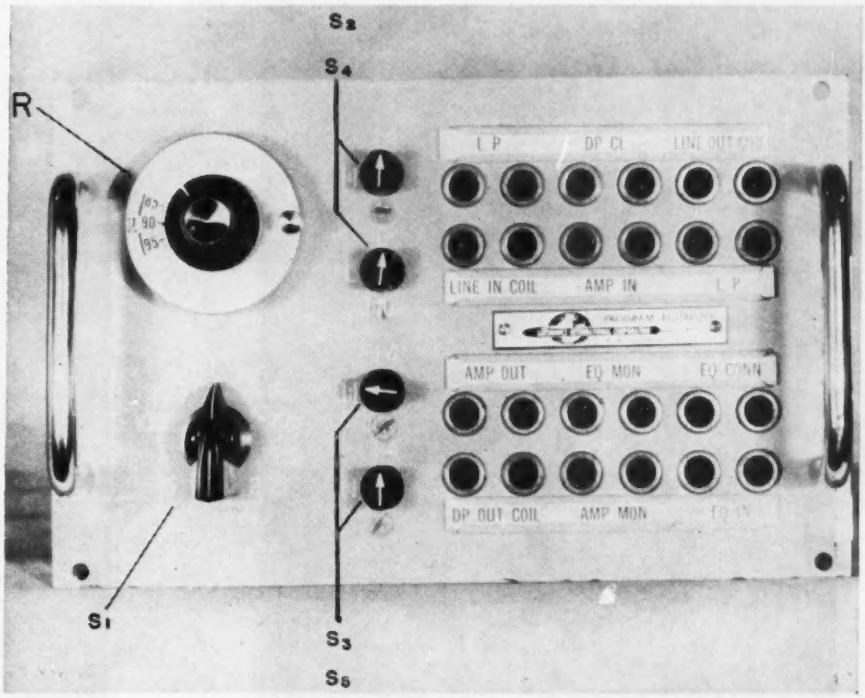
It is advisable to avoid the use of mainframe jumpering from terminal block to cable protector, etc. as this will introduce the possibility of cross-talk and noise into the circuits. Since final output of the equalizer is at a quite low level, for further amplification, any office cross talk is easily introduced into the lines involved.

The circuit at the TE&M Lab, available for use in checking equipment for the telephone industry, consists of 12,324 feet of 24-gauge cable and 6,524 feet of 22-gauge cable. A frequency response curve for the circuit was run with no equipment of any kind on the line.

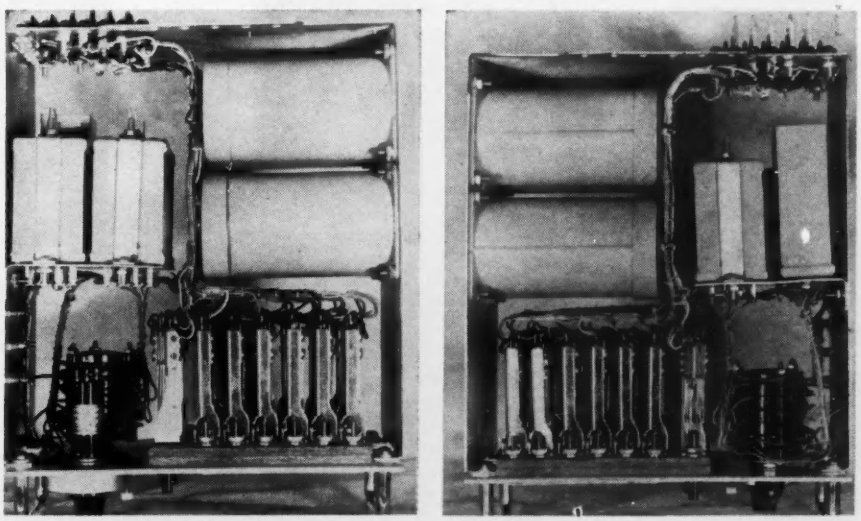
The frequency response is shown as curve A of *Figure Four.* As can be seen from the curve, response from approximately 20 cps to 900 cps was essentially flat, at an attenuation of 10.5 db, at 1000 cycles attenuation was 11.5 db, at 10 kc attenuation was 27 db, at 15 kc attenuation was 32.5 db, at 20 kc attenuation was 36.5 db.

As a general rule, the introduction of coils, similar to the type 111-C, at both ends of the circuit will tend to give some slight equalization to the circuit. This step was next performed on the TE&M Lab circuit. The results are shown in curve B and were somewhat surprising in that the circuit was actually downgraded rather than aided.

Please turn to page 74



(B) — Front view of equalizer.



(C) and (D) — Top and bottom views of equalizer.

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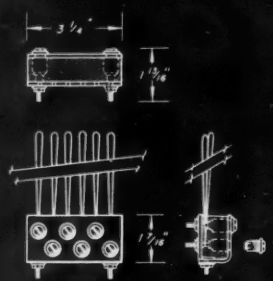

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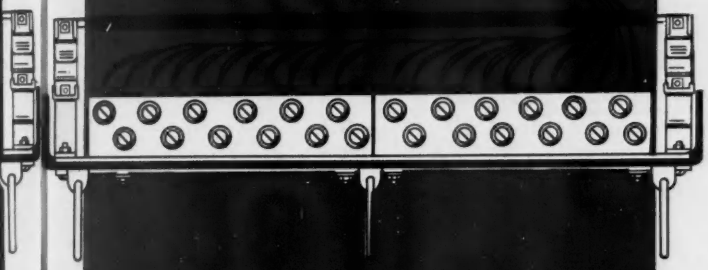

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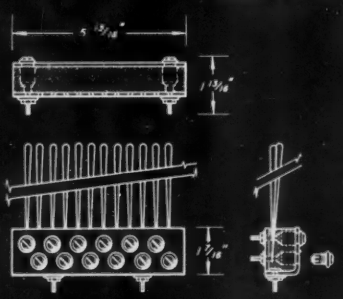

Six pair 3C protected block	81-206
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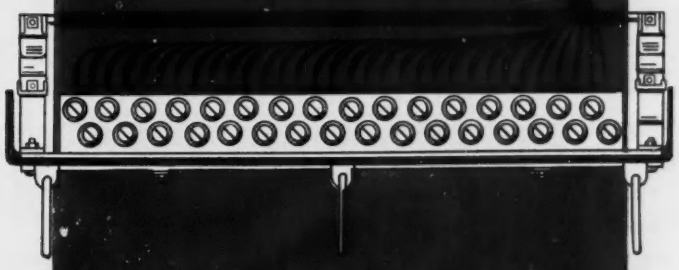

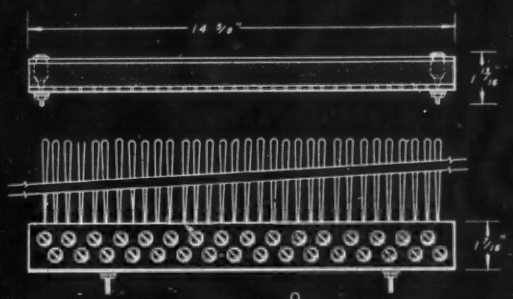

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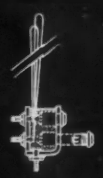

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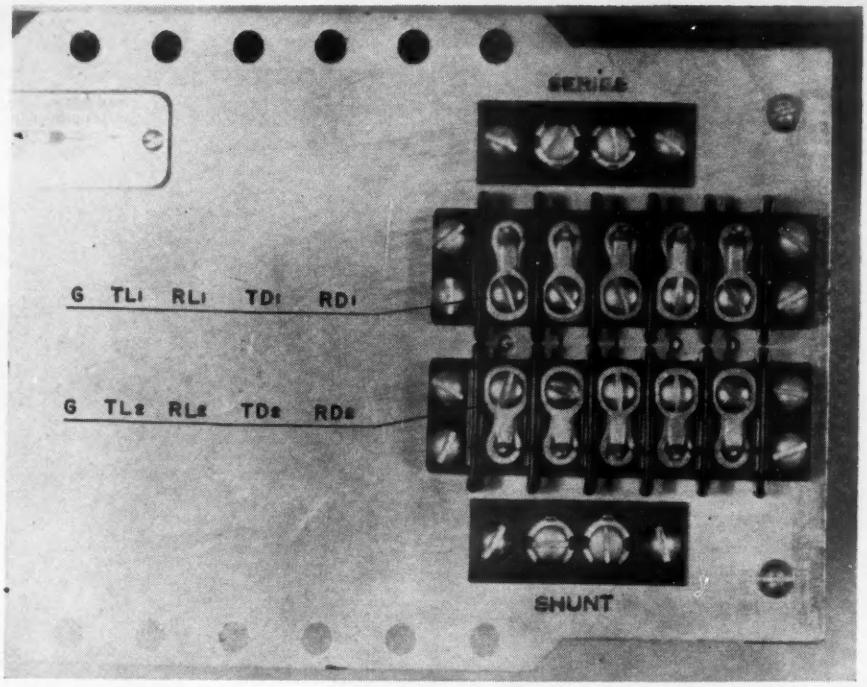
The circuit was then terminated on the equalizer. The only connnection necessary was to run the pair to the points marked TL_1 and RL_1 on the terminal strip. Switch 2 was set at 1:4 (150 ohms) and switch 3 was set at 1:1 (600 ohms), switch 4 was set on D in order to place the equalizer on the drop side of the coil.

It was first decided to equalize the Lab circuit at 5 kc. An examination of the frequency response curve of the unequalized line indicated that the circuit was down 20 db at 5 kc. Switch 1 was set at 6 kc (L/C to resonate at 6 kc). An oscillator was placed on the sending end of the line at 100 cps and 0 db output and, at the receiving end of the line, the variable resistance R was varied until attenuation, at 100 cps, was 21 db.

The value of R required to produce this attenuation was 190 ohms. A frequency response curve was then run on the circuit and is shown as curve C. As can be seen, the response is flat to less than 1 db, from 20 cps to 5 kc, and then begins to drop off.



(E) — End view of equalizer.

"Equalizing At 10 kc"

SWITCH ONE was then set at 10.5 kc (L/C to resonate at 10.5 kc). The same procedure, as previously described, was again used in that the value of R was varied, while sending at 100 cps, until an attenuation of 28 db was registered. A frequency response curve was then run and is shown on curve D. As can be seen, response was not flat. A decided hill occurred at 4 kc, which was approximately 4-1/2 db above the frequency response in the 20 to 200 cps range. The value of R used to produce curve D was 76 ohms.

Switch One was then set to 15 kc (L/C to resonate at 15 kc) and the value of R was changed to 91 ohms in order to produce an attenuation of 27 db at 100 cycles. The frequency response curve was then run and is shown as curve E. As can be seen, response is flat to less than 1 db from 20 cps to 6 kc, approximately 2 db to 9 kc, and 2.5 db to 10 kc.

The same procedure can be used to produce a circuit flat up to approximately 15 kc. In each case, lineup and checking was a matter of

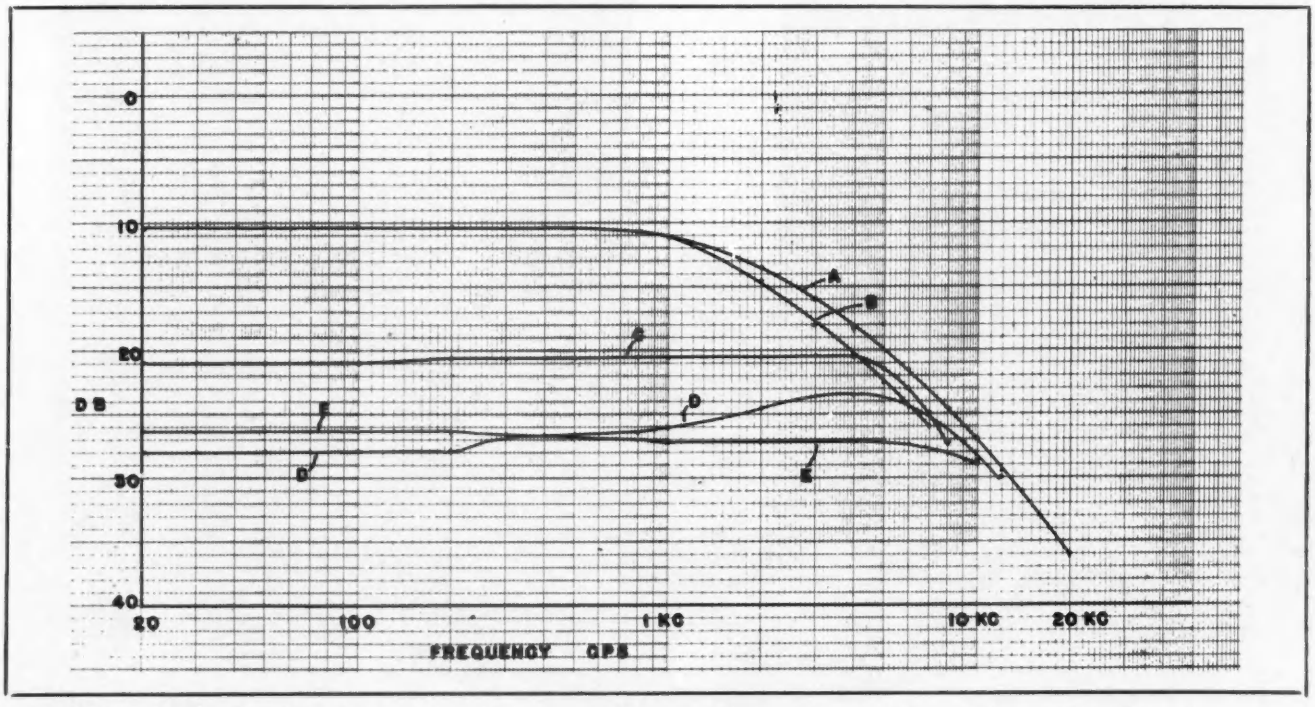


FIGURE FOUR: Results obtained by placing equalizer on lab test circuit. See text for explanation of curves.

minutes and presented no difficult problems.

"Change of Q of L/C Circuit"

THE TERMINALS marked "series," shown in the schematic in *Figure Two*, are for the insertion of resistance in series with the variable inductance in event it becomes necessary to lower the effective Q of the parallel resonant circuit. This will occasionally be necessary and will be apparent by a decided hump, or hill, in the vicinity of resonance.

To insert such resistance, it is only necessary to disconnect the strap across the "series" contacts and to insert a resistor of value determined by trial. If so desired, the resistor can be mounted in mounting holes provided along edge of chassis.

A full discussion of the treatment of the infinite variety of circuit conditions which may be encountered would be impossible in an article of this length. A more complete treatment is available from the supplier, from Bell Specifications, and from literature available from *Telephone Engineer and Management's Educational Division.*

It is hoped that this lab check by the TE&M Labs will indicate conclusively, to all readers of the magazine, that provision of high grade circuits, flat within specified limits, presents no particularly difficult problem and only requires proper equipment. — *C. D. Ehinger.*

Manufacturer's Comments

MR. EHINGER'S T E & M reports on the equalization of telephone cables were excellent, quite timely, and certainly should go a long way toward dispelling any idea that the equalization process is mysterious or complicated in any way.

There are several points on which I would like to comment, however. Mr. Ehinger, in his first article, made reference to the use of equalizing amplifiers vs. equalizer-amplifier combinations. Both methods are essentially the same, in that low frequency losses are made high and high frequency losses are kept low in order to offset the reverse effect which occurs in cable.

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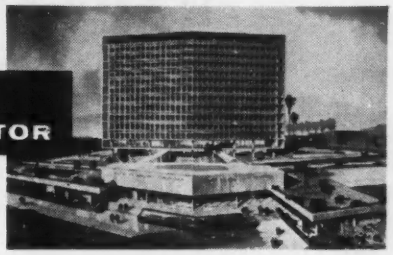
. . . outmodes all other methods of telephone installation

Model No. 104 — shown with standard telephone equipment — accommodates up to 8 No. 44-A Western Electric connecting blocks (4 on each side). Model No. 102 takes up to 6 (3 on each side), or if desired, the back of the Floor-Con can be used for external ringers, buzzers, or auxiliary equipment. This allows the desks and furniture to be free from all telephone equipment.



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BEAUTY — clean lines and modern design
UNIFORMITY — provides standardized connections throughout
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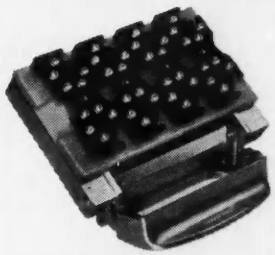

The fabulous FLOOR-CON allows phones to be connected entirely independent of office furnishings. Furniture may be moved or replaced without incurring expensive telephone changes. Gone are the clutter of equipment from desks and walls, and the needless marring of furniture.

Approved and specified by telephone companies, FLOOR-CON is used exclusively in many large buildings in business, industry and government. Attaches to all types of underfloor ducts and floor boxes, or fastens directly to the floor. Comes in four plated finishes to match the decor of the office.

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doubles
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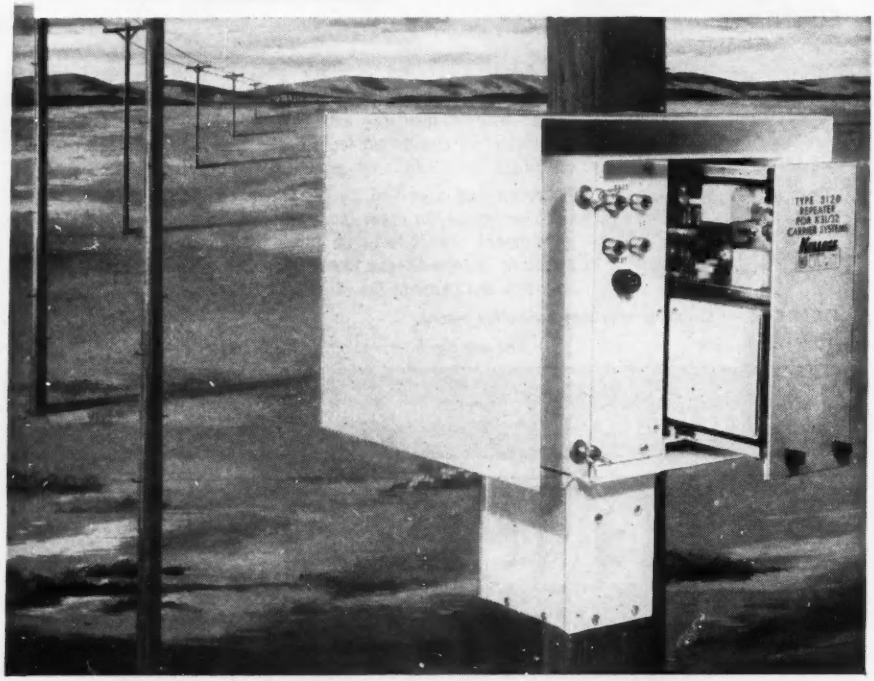

The only system offering a Repeater

Check these advantages:

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- ☑ And Kellogg repeaters are surprisingly low in cost!
- ☑ Kellogg Carrier offers more exclusive features than any other system on the market (see facing page).
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That's why you'll find Kellogg K-31 Rural Subscriber Carrier being installed by more and more independents across the country.

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See page 79 for list of Kellogg offices

noise ratio is determined by the losses of the cable, and there is little to choose, on a technical basis, between distributed equalization-gain methods and lumped equalization-gain methods. Only in loading do we realize effective signal to noise improvement through holding the cable high frequency losses to a minimum.

It has been the writer's experience that doing the equalizing in one package and adding necessary flat gain. in the form of a feedback amplifier, to compensate for cable-equalizer losses proves to be cheaper to install, easier to line up, and requires less maintenance. Further, keeping the equalizer and amplifier units separate generally results in greater long-term stability, and avoids creating new problems by adding variable phase shifts into the amplifier feedback path — which is already beset by too many frequency sensitive elements to begin with.

In the second article Mr. Ehinger deals with actual tests involving the equalization of a mixed 22 and 24 gauge cable of about 19 KF length, and indicates the results of these tests in a set of curves. I was particularly interested in curves B and D of the results that were obtained because they point up two very commonly encountered problems in lining up an equalized circuit.

For instance, curve B indicates that the input coil of the equalizer was switched for a transformation ratio of 4:1 (line to drop) rather than 1:4. The former will introduce greater losses at high frequencies than at low frequencies, therefore providing a reversed equalization.

This feature was included on the Airtronics equalizers because it frequently proves to be a useful means of flattening the slow rise in gain that occurs at high frequencies, on multilink circuits where, due to other considerations, some slight over-equalization is unavoidable in one section.

Generally speaking, however, reversed equalization should be avoided as much as possible, since indiscriminate use will lead to a sag or valley in the range of 1 KC to 4 KC, which further complicates the over-all job and imposes an additional load

on the equalizers of following sections.

A simple way to avoid getting reversed transformation ratio accidently is to remember that the customer's equipment (or the equalizer) will be nominally a 600 ohm impedance, and the cable, at high frequencies where reflection losses are not wanted, will look like roughly 150 ohms, therefore, equipment should look into a series winding, and the line should look into a shunt winding. This will hold true regardless of which end of the cable is being considered. With this configuration, the progressively increasing reflection losses that occur at each end of the cable, with decreasing frequency, will provide up to 12 db of normal equalization at 20 KC with coils alone.

The second matter of interest in the results shown by Mr. Ehinger is demonstrated by curve D. Occassionally minor hills and valleys in the response curve will result from deviations in gauge and types of cable, particularly the intermixing of pulp and plastic insulations in one equalized section.

Usually, however, a broad valley, followed by hump at the high end, is the result of overequalization, which means that more loss at low frequencies was inserted than was necessary. This is a result of using too low a value of R in the RLC network or an LC resonant frequency that is too low.

In this case, if the rise occurring between 1 KC and 4 KC was due to interaction effects alone, the LC resonance could have been increased to 7.5 or 9 KC, thus moving the peak of the hill to the right several KC, and R increased perhaps to 200 ohms or slightly more. This would have flattened the over-all curve, but naturally would have reduced the total amount of equalization for the section by about 4 or 5 db. For the section shown, and the LC combination employed (6 KC) 24 db of equalization would have been the maximum that could have been obtained for that length of mixed gauge cable.

H. L. Truchelut,
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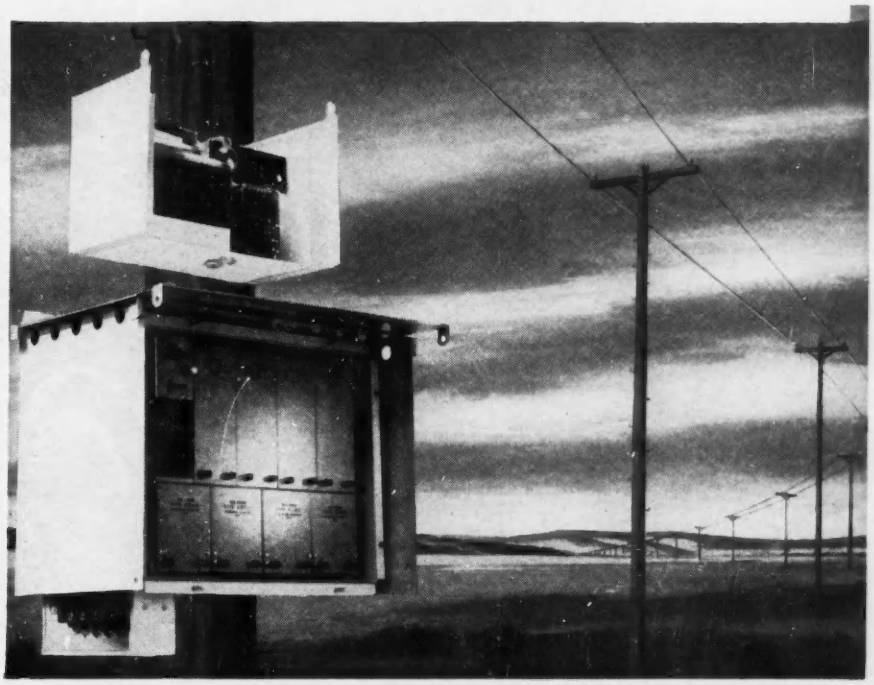

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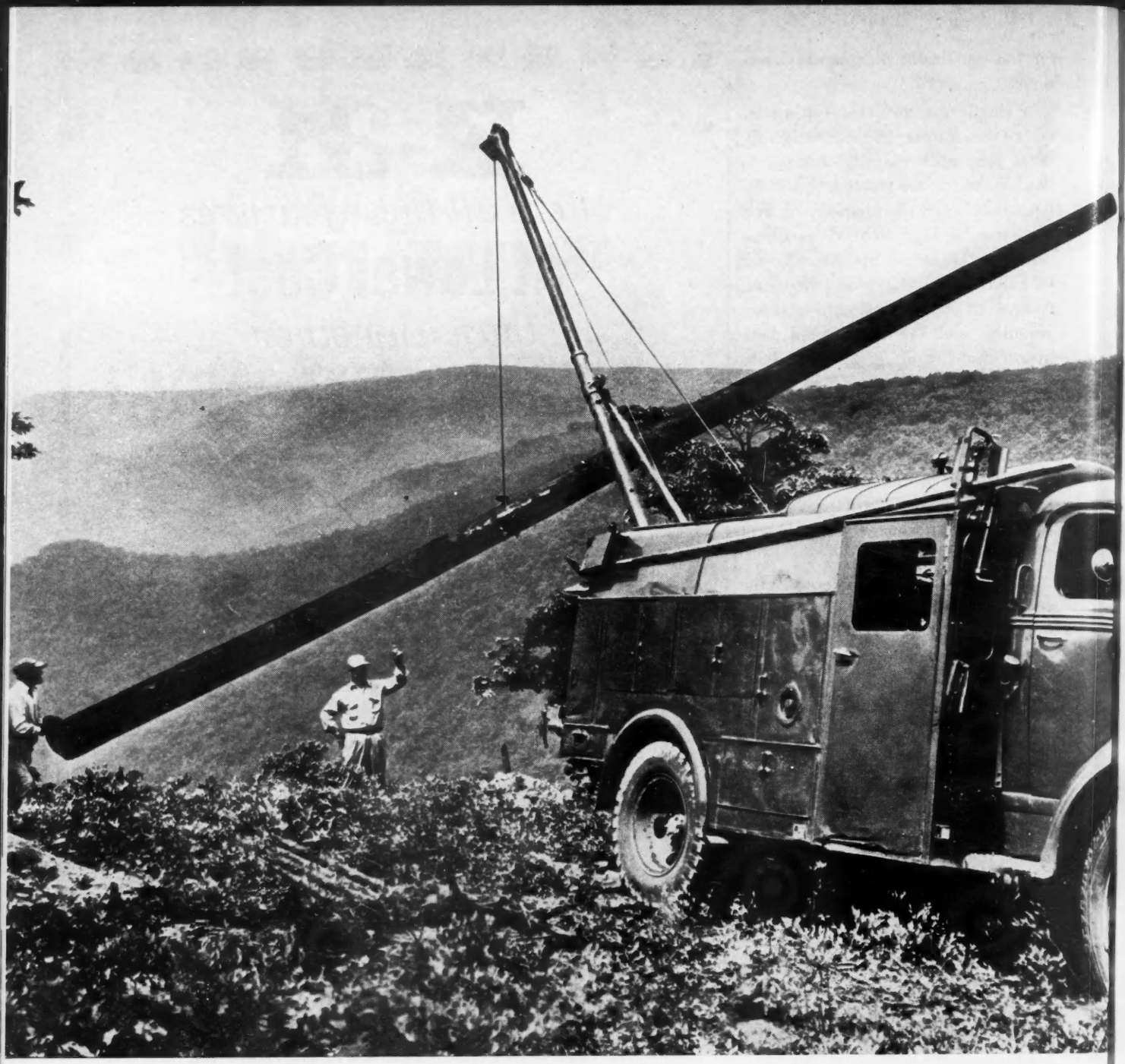

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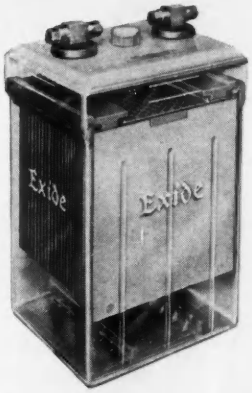

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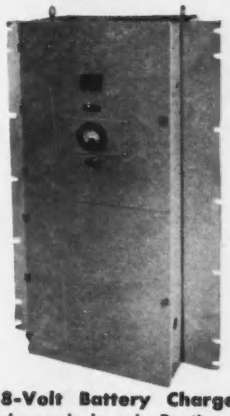

New 48-Volt Battery Charger Line. Completely redesigned Raytheon Recti-Chargers (R) feature no load to full load regulation of ±1%, no tubes, automatic compensation for rectifier aging, no audible hum. Most compact units on the market—single and three phase, output from 3 to 400 amperes. RAYTHEON MANUFACTURING COMPANY.

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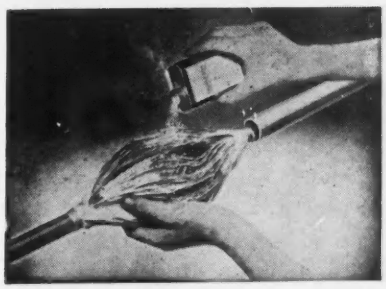

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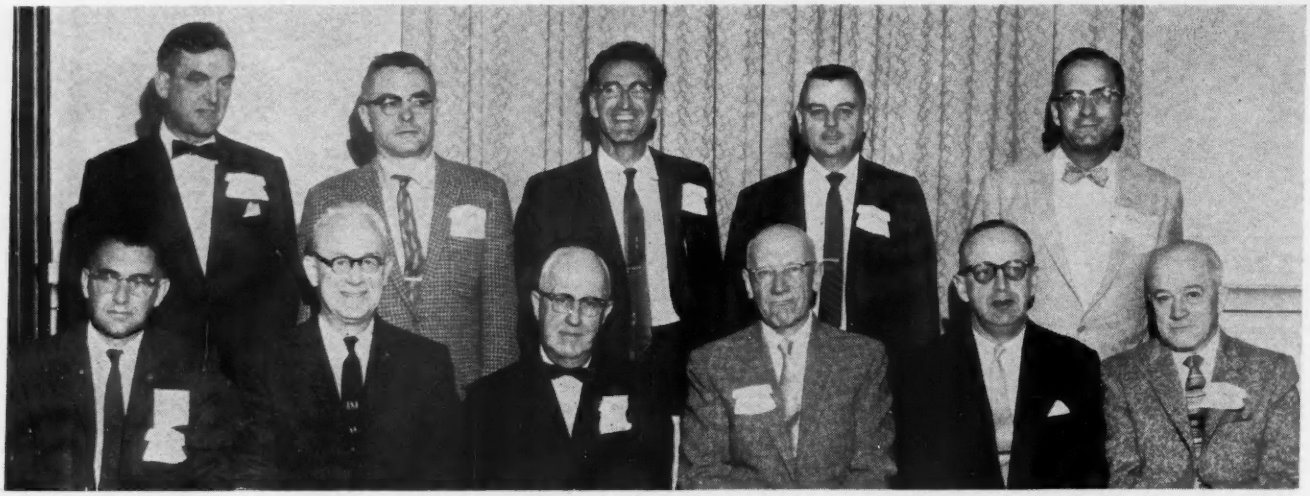


Officers and Directors of the Michigan Independent Telephone Association (seated, l to r): Directors, K. B. SAGE, Traverse Bays Tel. Co., Central Lake; R. J. SCHAFER (Director USITA), Pinconning Tel. Co., Pinconning; L. W. REYNOLDS (president elect), Ontonagon Tel. Co., Ontonagon; C. REGINALD SMITH (retiring president), Port Hope Tel. Co., Port Hope; K. W. BENCKERT (treasurer), General Tel. Co., Muskegon; P. E. TAYLOR (vice pres.), Pickford Tel. Co., Pickford. Standing (l to r): newly elected Director AL SPRY, Community Tel. Co., Howard City; E. L. CADWELL, Levering Tel. Co., Levering; JOHN COLLVER (vice pres.), Climax Tel. Co., Climax; D. K. CARLSON (chairman Convention Committee), Morenci Tel. Co., Morenci; J. R. FOX, Waldron Tel. Co., Waldron. (Missing from picture — Art Nickless, Wolverine Tel. Co., Millington, and John Sattler, Leelanau Tel. Co., Cedar.)

Michigan Independents Observe 24th Anniversary of State Telephone Assoc.

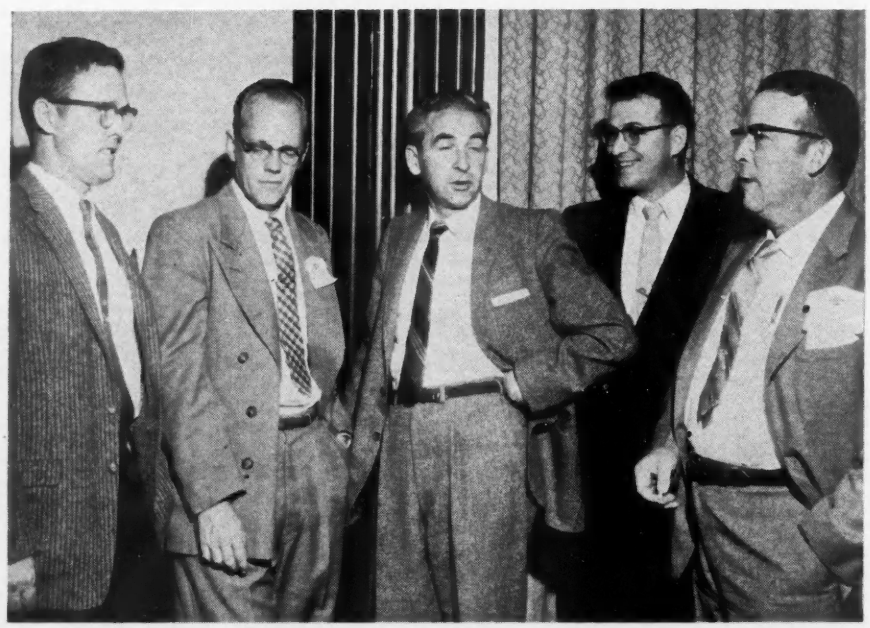
"FIRSTS" highlighted the 24th anniversary of Michigan Independent Telephone Association at its Grand Rapids Convention September 15-17. Among the firsts, the keynote address by Hugh A. Barnhart marked the initial appearance of a USITA president at a Michigan Convention.

An address by Norman McFarlin, assistant administrator of REA, was the first heard by Michigan Independents from an REA representative. Russell Schafer, president of the Pinconning Telephone Co., attended the convention as the first Michigander in history to be a member of the board of directors of USITA. Sharing the speaking program in his first address to the Independents was Commissioner Tom Burns, junior member of the Michigan Public Service Commission.

An entire day, set aside for suppliers without conflicting meetings proved a successful innovation, and two workshops geared primarily to the interests of plant personnel drew many favorable comments from the largest group ever attending a Michigan convention.

The election of Larry Reynolds, president of the Ontonagon Telephone Co., Ontonagon, as the Association's president for the Silver Anniversary year rounded out the "firsts," for Michigan's first telephone lines were built in Ontonagon in 1875.

Reviewing the signs of the times that point to phenomenal growth in the Independent industry, President Barnhart of USITA urged his listeners to be prepared to meet the challenge of the next decade by taking steps now to insure successful growth. He pointed to the desirability of smaller companies merging their interests in contiguous territories as a means of developing more efficient and profitable operations. He suggested that the merging companies could staff themselves with more highly skilled personnel that will be necessary to keep pace in the rapidly moving electronic age and still maintain their



JOE STRAVERS, left, Calhoun County Tel. Co., Homer, discusses Michigan convention with (l. to r.): LOUIS VAN DEN BERGE, Ottawa Tel. Co., Borculo; MARVIN TINHOLT and GLEN GARRISON of Daverman Engineers, and R. LYLE McGOWAN, Lawrence Tel. Co., Lawrence.

Michigan convention speakers (l to r): NORMAN H. McFARLIN, assistant administrator, REA, Washington, D. C.; HUGH A. BARNHART, president, USITA, Rochester, Ind.; and THOMAS BURNS, MPSC commissioner.

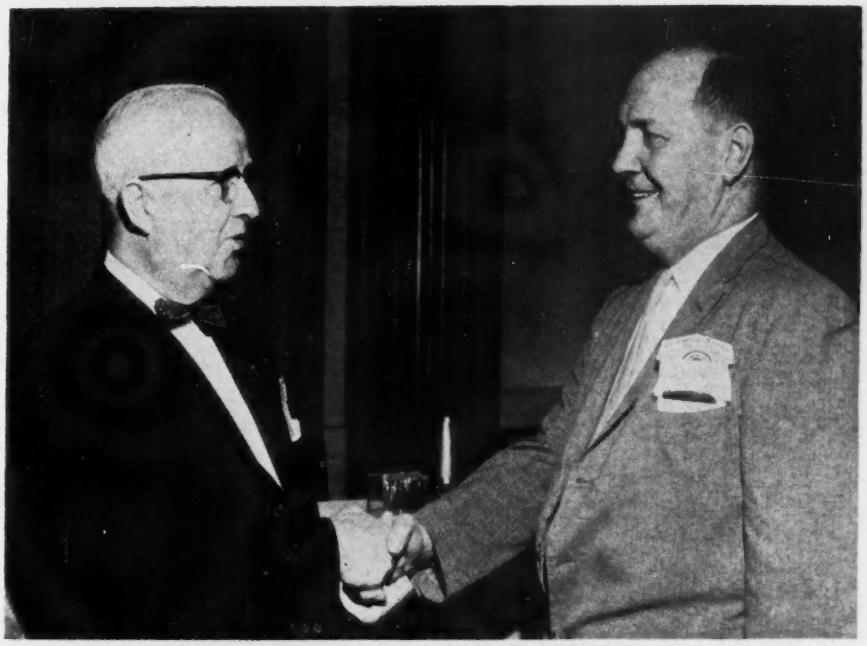
essential identity. He urged his audience to explore the possibility of making the Telephone Engineering Conferences available to greater numbers of key personnel as a means of meeting the challenge of the future.

REA's first speaker at a Michigan Convention found an interested audience as he spoke on "Opportunity and Progress," and shared his nationwide experiences in the Independent field. His observation that all the base rate subscribers of the Montezuma (Iowa) Telephone Co., with which he and his father have been associated, have single-party service impressed the audience.

Commissioner Burns commended the Independents on the outstanding post-war modernization of their segment of the industry and urged continued concern in providing high grade service in the public interest.

MITA President, G. Reginald Smith, Port Hope, who presided at the General Session, presented his report of the Association's activities during the past year. Highlights of his report showed that the trend of smaller companies in merging their interests has resulted in a total of 103 Independent companies in Michigan. With the addition of five more companies during the year, 87% of all Michigan companies are now active in the Association. These companies represented 95% of all the Independent telephones in the state. During the year, Independents realized a station growth of 4.9% with 15,000 new installations.

Afternoon workshop sessions were



L. W. REYNOLDS, president elect, and C. D. McLELLAN, executive secretary, Michigan Independent Telephone Association.

Members of this Michigan convention group are (l to r): JIM BAKER, Port Hope Tel. Co., Port Hope; JACK BELL, Moore Tel. Co., Caro; MRS. MEDFORD SATTLER, Leelanau Tel. Co., Cedar; MEDFORD SATTLER, Leelanau Tel. Co.; HARRY PACELL, Moore Tel. Co.; and FRANCES STAFFORD, Port Hope Tel.

highlighted by a half-hour movie of an actual buried plant operation taken by Lyle McGowan, manager of the Lawrence Telephone Co. The picture story proved an excellent introduction to the discussion of buried vs aerial plant.

Implementing the film, an explanation of practical experiences was given by a panel of "experts" that included Jerry Junkers, General Telephone Co.; Louis Eggleton and Bernard Cotton, Michigan Bell Telephone Co., Grand Rapids; Marvin Anderson, Carl C. Crane Co., Madison, Wis.; Vernon Freeman, REA field engineer, Macon, Mo.; and Bucky Harris of Harris-McBurney Co., Jackson. There was complete agreement on the importance of the depth factor and that it is impossible to overprotect against lightning.

Tracing of open circuits in RDW was one of the key points of the workshop on "RDW Practices and Problems," conducted by Joe Stravers, manager of Calhoun County Telephone Co., Homer. Discussion of the merits of puncture-probing versus use of the wheatstone and tracer tone was keen, and was finally resolved on the basis that whatever methods were used it was entirely dependent upon the skill and reliability of the tester.

Stravers was assisted by the following men who acted as resource persons: Louie VanDenBerge, manager of Ottawa Telephone Co., Borculo; Milton Krieg, supervising repair foreman for Michigan Bell, Grand Rapids; and Ron Kinsman of General Telephone Co., Muskegon.

Al Spry, owner of the Community Telephone Co. at Howard City, was elected to the board of directors to succeed C. Reginald Smith, Port Hope. D. K. Carlson, Morenci Home Telephone Co., Morenci; K. B. Sage, Traverse Bays Telephone Co., Central Lake; and Pat Taylor, Pickford Telephone Co., Pickford, were reelected to the board.

The directors, in addition to electing L. W. Reynolds as president, selected the following officers: Vice Presidents, John Collver, Climax Telephone Co., Climax, and Pat Taylor, Pickford Telephone Co., Pickford; treasurer, K. W. Benckert, General Telephone Co., Muskegon; and Charles D. McLellan, Lansing, executive secretary.

Recognition of Mrs. Ruth Davis, secretary of the Citizens Telephone Co. of Bridgman, whose telephone career began 50 years ago in Lincoln, Neb., was high spot in the banquet program at which Roy Putnam of General Telephone Co., Muskegon, acted as master of ceremonies.

Managers of the new member companies who were welcomed to the association during the banquet included: Clarence Donovan, Delton Telephone Co., Delton; Bill Schmidt, Shiawassee Telephone Co., Perry; Otto Gottschalk, Concord Telephone Co., Concord; Louis VanDenBerge, Ottawa Telephone Co., Borculo; and Jim Hoogesteger, Mesick Tel. Co.

Nevada Assoc. Holds 1st Convention: J.W. Christian, Jr., Elected President

NEVADA'S Governor Grant Sawyer, speaking over a direct telephone wire, welcomed the Nevada Telephone Association's first annual convention to his home town, Elko, Nev., on September 23.

At least three "firsts" were scored in the governor's welcoming address: It was the first time a convention had been addressed by telephone in Elko; it was the first time Governor Sawyer had ever addressed a convention by telephone, and the convention was the first convention of the Nevada association.

The three-day convention of the Nevada association opened in the Stockmen's Motor Hotel with Mike Burns, president of the Rio Virgin Telephone Co., Mesquite, Nev., presiding. Members were welcomed to Elko by Mayor Frank Williams.

"The Present and Future of Telephony" was the subject of the opening address by Hugh A. Barnhart, USITA president.

Barnhart called for the elimination of all excise taxes on telephones. He declared that the taxes were a "discriminatory financial burden" upon the public, collected by the telephone companies and turned over to the U. S. government. "When the day comes that Congress considers tax reduction," he said, "we will insist that all telephone excise taxes will be the *first to come off.*"

The speaker stated the people must

New officers of the Nevada Telephone Association (l to r): Sec.-Treas., MIKE BURNS, Rio Virgin Tel. Co., Mesquite, Nev.; Vice Pres., MRS. EVELYN M. GEROW, Yerington (Nev.) Electric Co.; and Pres., JOHN W. CHRISTIAN, Lincoln County Tel. & Tel. Co., Pioche, Nev. Not shown are Directors Paul R. Bond, Reno, and Frank Dresslar, Sr., Las Vegas.

work for the elimination of these "discriminatory" taxes. He said, "All out repeal will never be accomplished unless the great mass of back-home telephone users, who are the voters, tell their congressmen about it. Our job as telephone folks is to educate the public so everyone will realize they alone will benefit from such action and that complete repeal will bring them an immediate reduction of 10% off their monthly bills."

He declared that the 1959 excise taxes paid by the people on telephones will reach $700,000,000.

Barnhart also stated that all manual operated exchanges must ultimately be eliminated for profitable operation.

"The art and science of telecommunication is one of the greatest forces that will carry us to a better, brighter and more livable world," he told his listeners. "If federal and state legislation does not hamper us and if we are given justifiable rates, then we can march ahead with science, technology and planned expansion."

He said, "The telephone has helped to make our lives faster, brighter, better and more rewarding, and it has brought relief to millions of people from tedious and frustrating monotony. There is evidence at every hand that the recent rapid growth and the many improvements in telephone service are only the beginning. More sweeping changes are in the offing, and they will affect everyone of us, whatever we do, whoever we are and wherever we may be."

The change in colors for telephones was emphasized by Mr. Barnhart when he said, "Never underestimate the power of a woman. Women are calling for attractive phones in their homes and extensions give the operators a great opportunity for the expansion of business."

He also touched upon predictions that a radio-relay satellite will make it possible to telephone any point in the world.

Noel A. Clark, member of the Nevada Public Service Commission, told the convention, "Public relations is the business of making sure that the public does have all the facts."

Taking the telephone business spe-

Nevada Independents relax between sessions of First Annual Convention of Nevada Telephone Association.

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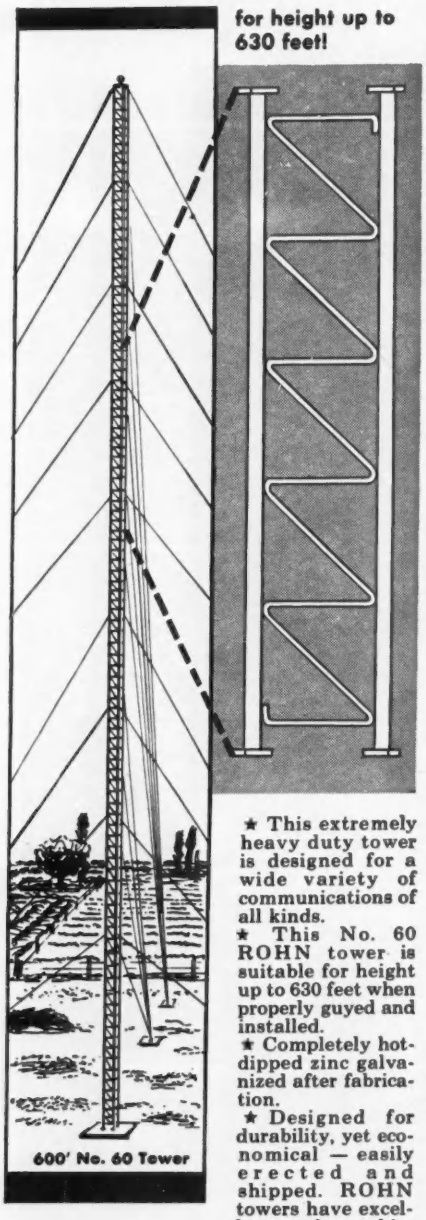
for height up to 630 feet!



★ This extremely heavy duty tower is designed for a wide variety of communications of all kinds.
★ This No. 60 ROHN tower is suitable for height up to 630 feet when properly guyed and installed.
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cifically, he added, "The only basis on which you can live soundly with the public over the long run is to stay with the facts. Any trickiness or fanciness or coloring is bound to catch up with you."

Continuing, Mr. Clark said, "There is such a thing as business climate, too. I don't believe this can ever be separated from what we call public relations — the way the public sees your business or organization.

"Now it's easy to say that a favorable business climate is important to everyone. But it is something we don't think much about. It is a little like a can opener at a beer party in that you don't really attach much importance to it unless it isn't there. I happen to think that Nevada has an extremely favorable business climate. The way we have grown in the last few years — the way new industries have come into our state—indicates that we both want and appreciate all the benefits that growth and industry can bring us."

Clark said the Nevada Commission is trying to keep the people informed by telling them "exactly what we are up to and why decisions are made."

He pointed to the dual role of the Commission in making rates. He summed this up by saying, "This is to see to it that the customer gets adequate service and is charged the lowest reasonable rate consistent with the utility earning a fair return upon its property dedicated to public use. Thus, the Commission must balance the different interests involved and come to a conclusion which is fair to everybody."

Speakers at the September 24 sessions were: Frank A. Morris, director, telecommunication research, Stromberg-Carlson Co.; Robert E. Bond, Bell Telephone Co. of Nevada; Charles C. Kaiser, field engineer, Lynch Carrier Systems, Inc.; and John H. Barrows, vice president, California Interstate Telephone Co.

The ladies in attendance at the convention were treated to a luncheon and fashion show in the Pool Patio of the Stockmen's at noon. Miss Eileen Gregory, traffic supervisor of the California-Pacific Utilities Co., was in charge.

J. W. Christian, Jr., was elected president of the Nevada association. Other officers of the association are: Mrs. Evelyn Gerow, Yerington, vice president; Mike Burns, Mesquite, secretary-treasurer. Burns is the retiring president and Christian was elevated from the vice presidency to head the organization.

Paul R. Bond, Reno, and Frank Dresslar, Las Vegas, are members of the board of directors along with Christian, Mrs. Gerow and Burns.

225 Attend Rocky Mountain Meeting: C. A. Blakeney Elected Assoc. Pres.

OUTSTANDING exhibits, helpful "Workshop" sessions, and addresses by top speakers were features of the 13th annual convention of the Rocky Mountain Telephone Association.

Speakers addressing the three-day meeting at the Hotel Utah, Salt Lake City, included: Association President H. B. Norman, Gunnison, Utah; the Honorable George D. Clyde, Governor of Utah; L. F. Wingert, vice president-revenue requirements, Mountain States Tel. & Tel. Co., Denver, Colo.; Norman McFarlin, assistant administrator, REA, Washington, D. C.; USITA Vice President Foster B. McHenry, Jefferson City, Mo.; Harold C. Martin, assistant vice president-public information, Mountain States Tel. & Tel. Co., Denver, Colo.; Roy H. Priest, division commercial superintendent, General Tel. Co. of the S.W., Brownfield, Texas; and R. W. App, Independent company relations engineer, Mountain States Tel. & Tel. Co., Denver, Colo.

Exhibits by the associate members of R.M.T.A. were exceptionally outstanding. The Independent Co.-MST&T Co. Workshops, held each afternoon of the convention, proved very beneficial to the participants. These Workshops are included in each convention. Guided tours through the Mountain States Tel. & Tel. Co. cen-

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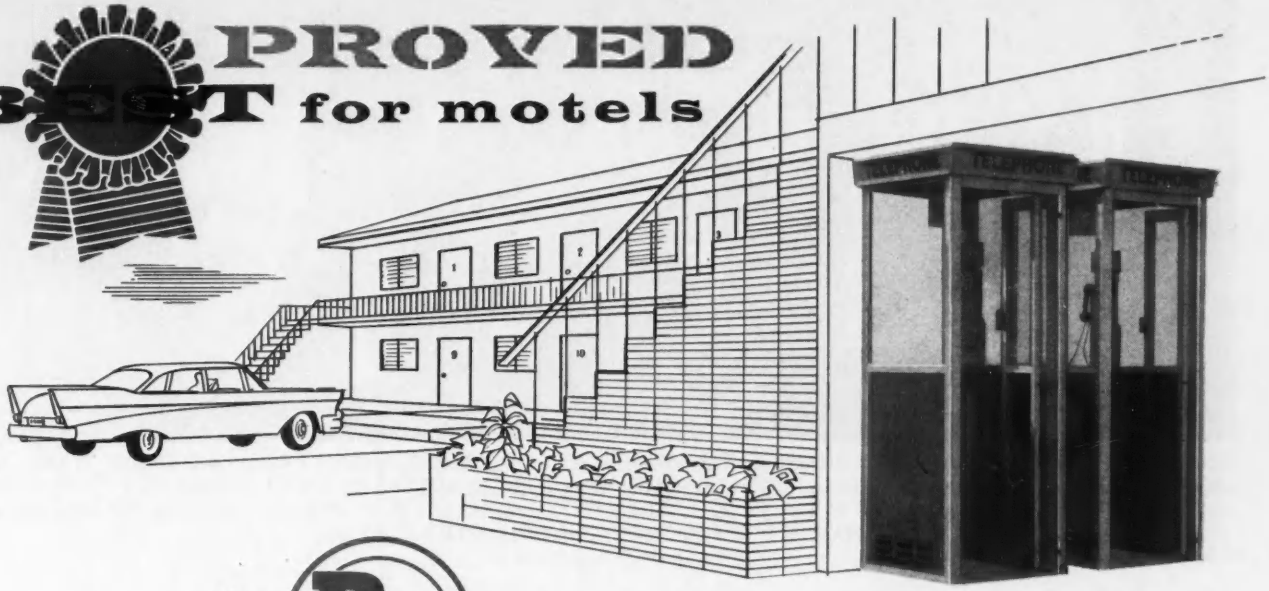

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Directors and officers of the Rocky Mountain Telephone Association. Seated (l to r): GRID ROWLES; WARD BLAZZARD; VICTOR REDMAN; Vice Pres. DONALD DICKSON; H. B. NORMAN; Pres. C. A. BLAKENEY; J. E. TIPTON; and Secy. DICK BAKER. Standing (l to r): D. A. McLEAN; C. W. HAAS; E. P. CORBIN; RULON CALLISTER; C. M. HART; L. J. HITCHENS; and CHARLES McLEAN.

tral office building in Salt Lake City each day were well attended and the visitors were interested to see the automatic 4A toll switching equipment.

The ladies' tea and bridge held the first afternoon of the convention and the luncheon for the ladies given by the Mountain States Telephone & Telegraph Co., which was held in the Starlight Gardens the second day of the convention, were well attended.

Highlight of the banquet, held Thursday evening, September 17, was the presentation by C. A. Blakeney, vice president of RMTA, of service pins to the past presidents of the association: 1947-8, Richmond R. Mann, Independence, Mo.; 1949, C. W. Haas, Big Timber, Mont.; 1950, T. Clark Callister, Fillmore, Utah; 1951-2, J. W. Corbin, Moab, Utah; 1953, Mills Roberts, Memphis, Texas; 1954, R. A. Manuel, Browning, Mont.; 1955, C. M. Hart, Kingman, Ariz.; 1956, Ward Blazzard, Kamas, Utah; 1957, Rulon Callister, Delta, Utah; 1958, Floyd Reyher, Haxtun, Colo.; and 1959, H. B. Norman, Gunnison, Utah.

At the opening session, Mr. Wingert discussed "Meeting Revenue Requirements," and pointed out that because of the outside competition and because of the customer ownership of electrical and gas equipment, telephone service is more vulnerable to economic changes than the other utilities.

"Studies made in the 1930's," he said, "show clearly that telephone revenues declined sooner, declined more, and recovered later than the revenues of other utilities."

Emphasizing that these factors contribute to another major difference among the utilities — stability of earnings — Wingert stated this difference is of major importance in determining the required earnings level and the setting of rates by regulatory commissions.

"The more stable the company's revenues are the more stable its earnings are," he said, "and the more stable the company's earnings are the safer its securities become."

Discussing regulation, Mr. Wingert stated, "It is not the purpose of sound regulation to destroy good and efficient management."

"I do not believe efficient management should be penalized or limited to average profits in the utility business any more than in the competitive field," he said, "and I do not believe that inefficient management is entitled to good profits in the utility field any more than in a competitive business . . ."

Referring to the "natural inclina-

Rocky Mountain Telephone Assoc. honored its past presidents at convention banquet. The past presidents and their wives are seated at head table.

tion to want utility rates to be kept at rock bottom and for customers to grumble whenever commissions grant increases," Wingert said, "I am sure all of us favor low prices. At the same time, none of us really want to buy at prices which would bankrupt the utility, particularly when we depend on them for our future service.

"I am convinced," he added, "there are good reasons why fixing utility rates at the irreducible minimum is not in the public interest."

Stating that regulatory bodies have never allowed revenues adequate to meet but a small portion of the need for additional funds out of retained earnings, Wingert emphasized "This means that in order to meet the growing needs of its customers, a utility must be able to sell additional securities and, of course, buyers are not interested in securities which, because of regulation, offer meager opportunities for capital gain unless they provide a fair return."

"The inevitable consequence of unreasonably depressed rates," he said, "would mean, first, that utilities would be unable to market common stock. They might sell bonds or even preferred stock, but only at prices which provide a high yield to the investors and a high cost of money to the utility. Rates, therefore, would have to be adjusted upward to cover the high cost of money and, in the long run, would end up higher than necessary, had reasonable rates been allowed to begin with. High cost money in the capital structure may be a burden on the rate payers for a long time and may even threaten solvency if a severe economic decline should occur.

"Also, if the utility's earnings are bad enough, it may not be able to secure the funds needed for growth. If the growth needs are not met the economy of a community suffers. Likewise, of course, a bankrupt utility may bring a change to public ownership."

Mr. Wingert stressed that a fair and forward looking regulation, even though strict, but which grants prompt relief in adequate amounts, insures investors of the continued financial well being of the company and assists the company in obtaining the

BDSA Issues Mid-Year Review And Outlook On Communications Manufacturing Industry

THE COMMUNICATIONS equipment manufacturing industry looks to 1959 with optimism, instead of with caution as in 1958, according to the Business and Defense Services Administration, U. S. Department of Commerce. Although sales for the first quarter of 1959 were slightly lower than for the first quarter of 1958, the BDSA reports the industry expects sales for the remainder of 1959 to exceed 1958 volume by 10% and thus approach the 1957 level.

Strong recovery during the second quarter of 1959 points toward a bigger year than seemed likely last December, and a general expansion is taking place in the industry to meet 1960 requirements. Employment has already increased by more than 6,000 employes, during the first half of 1959. Building construction during the first six months has added approximately 2,000,000 square feet of floor space, and the accelerated pace is due to continue in the second half of the year to accommodate the backlog of orders.

The communications equipment industry is composed of approximately 25 well-known major manufacturers. The equipment produced by the manufacturing segment of the industry includes a wide variety of highly complex switching and transmission items. These are usually custom built for the varied communications needs of domestic operating telephone, telegraph, and international radio and cable companies. The manufacturers are located principally in New York, Nebraska, Illinois, Ohio, and California. Recently the industry has expanded to meet its commitments and has constructed plants in many other states, particularly in the south; North Carolina, Mississippi, Florida and Oklahoma.

First quarter 1959 shipments were at a lower rate than the fourth quarter of 1958; however, during the month of May alone, 1959 production estimates had to be increased significantly by most of the manufacturers of the industry, who express optimism for continuance of this upward trend for the remainder of 1959.

The principal items of communications equipment and components produced in 1958 and expected to be produced in 1959 follow:

Product	Unit of Measure	Quantity of Production in Units 1958	Estimated 1959
Telephone sets	sets	7,005,915	7,900,000
Dial central office equipment	lines	3,177,635	3,800,000
Dial PABX equipment	lines	463,322	500,000
Manual central office equipment	positions	4,719	5,200
Manual PBX equipment	positions	8,882	11,150
Ringing machines	units	19,387	20,500
Repeater equipment (voice & telegraph)	repeaters	362,016	350,000
Intercommunication equipment	stations	11,647	15,200
Telegraph office equipment	instruments	50,921	52,000
Protectors, communications	units	3,438,254	3,425,000
Cable terminals	units	940,178	800,000
Telephone booths, metal	booths	26,431	29,000

The manufacture of telephone instruments and dial central office equipment are the common production indicators as to the trends of the communications industry.

According to the BDSA report the communications industry relies upon small business to a great extent, as evidenced by its purchases in 1958 from some 32,000 manufacturers, of which 90% employ less than 500 people. These purchases amount to some $1,150,000,000 each year. Consequently, many small businesses are dependent upon the economic health of the communications industry.

The communications industry maintains more than 50 distributing houses throughout the country for warehousing of materials and supplies and for the repair of worn equipment. This would be especially important during mobilization.

During 1957, the communications manufacturing industry provided employment for some 175,000 workers, who were paid $970 million

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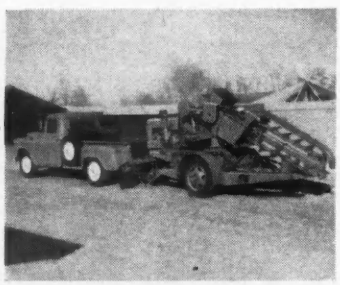

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needed capital on favorable terms for expansion.

"Utilities feel strongly about the degree or severity of regulation," he said. "After all, utilities have the same basic problems as any other business in most of their operations, including financial management and risk-taking, and utilities feel strongly that their managements should have flexibility to act without restriction as do other companies in these fields. The guiding line between regulation which performs the proper functions of regulation and regulation which infringes on management functions is very often a fine line. I think it is significant that commissions are seldom anxious to impose their regulatory power upon wage levels, and generally they tread lightly in the field of capital expenditures.

"For the above reasons, I believe you will agree that the quality of regulation will determine in a great measure our future. I believe we should have regulation that encourages innovations, that rewards efficiency, and that allows management to manage as long as it produces good results. Utilities must have high standards of service, and regulatory bodies should support these standards. Consumers should be required to pay a fair price for their service and they should not be alarmed if a regulated company is efficient and earns a good profit."

Speaking at the second convention session, H. C. Martin reported that statisticians have forecast a 31% population increase in the next 10 years in the Rocky Mountain area.

"The rate of growth in this Mountain area," he said, "has been faster than for the nation as a whole and will continue at a higher level according to current forecasting. People like this part of the country — its climate — its pleasant living and its increasing business opportunities."

Looking ahead to the late 1960's, when the postwar baby crop reaches the age of parenthood, Martin stated this may lead to another big expansion at the close of the century when this second postwar generation marries and has children. All of this is in

addition to a declining death rate. Need for food, clothing, and shelter and demand for a constantly increased standard of living hold great prospects for the economy.

"Between now and 1965," he said, "government analysts figure the nation will need six million more workers to produce the goods and services demanded by our expanding population. Housing needs will rise drastically in the next 10 or 20 years. Households will be larger. Suburbs will grow larger as population becomes more concentrated near urban areas."

Expressing his belief that the telephone industry has the opportunity to expand as it never has before, Martin emphasized that "people will buy if we do a sound advertising and selling job."

"As we look ahead toward the sixties," he said, "I'm sure we can agree that there is great opportunity for growth. We began acting more and more like any other competitive business in the fifties and we have to keep thinking that way to get our fair share of the consumer market. We'll have a variety of new products to advertise and sell. Successful promotion takes planning, initiative and hard work but the results should be well worth the effort."

Commercial Superintendent Priest told the Rocky Mountain conventioners that "Uncollectibles" involve more than just the actual amount of the customer's bill.

"Most of it," he said, "can be called 'lost money.' It may be small, percentagewise, but it is money that could have been in our pockets."

Emphasizing that it is "bad enough to spend money on storms, teardowns, wet cable, etc., but to lose additional money which is due us from the customer is adding insult to injury," Mr. Priest stated that the solution is to set up a collection practice and *use it.*

"If we decide that a collection practice is what we need but will not enter into it wholeheartedly, it will not succeed," he said. "If we are not going to use it — *don't set it up.* We must study the situation very carefully, however, before we decide we don't need it."

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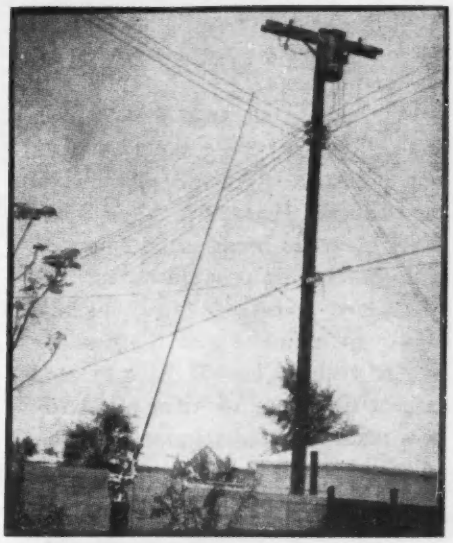

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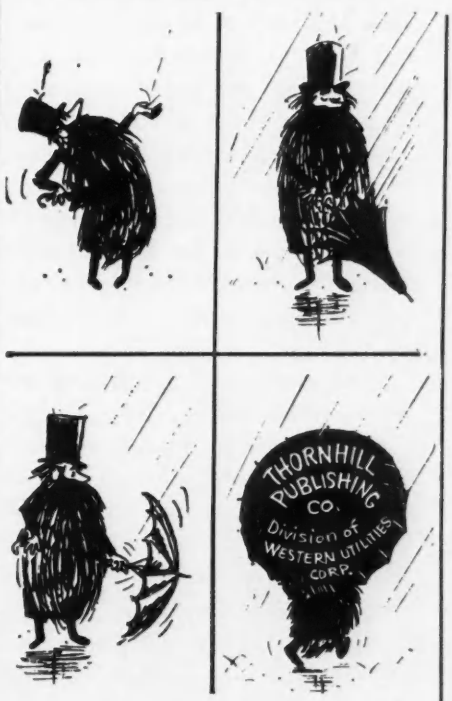

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should be set up to protect the company *and* its customers, Priest added, "We need to protect ourselves to remain in business, and the subscriber needs to protect himself from going too far into debt."

"We should all have a collection *policy*," he said. "We should always render correct and intelligible bills to the customer. He expects it and is entitled to it. He needs to be educated as to our billing procedures, such as when, how, and where to pay his bill. If we are efficient and businesslike in our methods he will have greater respect for us. If we treat our business matters in a haphazard way he will pay his bills in the same manner."

The final convention speaker, R. W. App, reviewed some of the reasons for the Bell System and the Independent industry adopting mark sense operation.

"Primarily," he said, "the reason for the change is to combat the rising costs facing us today. It has been proven by the industry that this process will result in considerable savings as well as improved methods throughout various phases of the business. For example, significant benefits include:

"Traffic: — Traffic savings result from the elimination of manual counting, rating, sorting and filing of toll tickets by terminating points. This means reduced personnel, improved study procedures and more data available at lower costs.

"Commercial: — The result here is fewer calls for toll adjustments, less filing and clerical work and more and better toll sales information.

"Accounting: — The greatest benefits from mark sense operation will be in the Accounting Department, where many of the manual work operations are converted to machine operation. This results in quite a savings in personnel.

"Customer: — Finally the customer will receive an improved statement of long distance charges. Called points and certain other entries such as telegram message charges are generally spelled out rather than abbreviated which should result in better customer understanding of our bill."

After reviewing some of the terms

Utah's Governor GEORGE D. CLYDE (center) addressed 13th annual convention of the Rocky Mountain Telephone Assoc. Others shown at speakers' table are (l to r): DICK BAKER, H. B. NORMAN, NORMAN H. McFARLIN, and L. F. WINGERT.

associated with mark sense operation, Mr. App explained how the cards will effect the toll billing operation and how they may be adapted to present billing methods. To simplify the discussion he divided companies into two classifications.

(1) Those companies which will continue to do their own billing. These include full toll centers or tributary exchanges performing ticketing and timing on B-I traffic. Such companies presumably will wish to continue preparing toll tickets of the present 1A type. Also in this classification are those companies who wish to continue to prepare their own toll bills. These would be companies who feel their present methods such as microfilming are more economical than to have the Mountain States Company prepare the bills for them.

(2) Those companies where it would be feasible, and the Independent is agreeable, for the Mountain States Telephone & Telegraph Co. to prepare the customer's toll statements at a charge.

"For those companies falling into the first classification," App said, "we will provide the mark sense toll cards in five-day rounds for billing purposes the same as at present. Initially we plan to furnish the full card; however these cards may be cut to toll ticket size for ease of handling.

"Certain of your companies who are presently preparing 1A type toll tickets will probably wish to give consideration to converting to mark sense operation sometime in the future. Cost factors to be considered in such a conversion are the modification of the calculagraph as well as certain switchboard modifications.

"I understand that a calculagraph modification kit costs about $1000. The modifications in the switchboard include enlarging the slot on the key shelf as well as ticket compartments on the face of the switchboard. Training of the operators is also necessary and on the average it takes about two days per operator. I do not know of any Independent supplier or others that may furnish modification and training services to an Independent company; however there may be some. As a result it would appear that any training necessary would have to be accomplished by each individual company. It is possible that as we gain more experience with our exchanges we may be in a position to offer some assistance along this line."

Referring to the second classification, App stated that in the past it had not been practical for Mountain States Telephone & Telegraph to do any of the billing for Independent companies.

"However," he said, "with the introduction of the machines it appears at this time that we can prepare customers' toll statements for certain of the Independent as I have previously mentioned.

"Such a bill would not carry any company name and would have to coincide with the settlement period, i.e., 21st to 20th of the month. The customers' bills together with the supporting mark sense cards would be furnished to your company within approximately seven to 10 days after the closing of the settlement period. The charges from these statements would be included with other of the service charges for your monthly bill . . ."

In his closing remarks App pointed out that mark sensing is only an ini-

tial step toward the further mechanization processes that ultimately will be developed in the telephone industry.

"It makes sense to adopt mechanization process wherever feasible," he said. "The estimated savings to both the Bell System and the Independent industry from the mark sense operation of toll tickets will be tremendous. By adopting further mechanization procedures for other operations it will bring about a halt to the growth in clerical workers in the telephone industry, which everyone knows has grown out of proportion to the dollar volume of our gross income. But, more important, I feel that from an Industry standpoint the introduction of not only the mark sense toll operation but other changes that will be brought about through mechanization points up the requirement for the continued close coordination that we have experienced in the past between the Bell and Independent portions of the industry in the exchange and working out of new ideas."

At the business session, C. A. Blakeney of the General Telephone Co. of the S.W., Carlsbad, N. M., was elected president of the Rocky Mountain association. Other elected officers are: vice president, Donald Dickson, Project Mutual Telephone Co., Rupert, Ida.; and secretary-treasurer, J. W. Baker, 805 Garden Ave., Coeur d'Alene, Ida.

Directors of the Rocky Mountain association are: Mr. Baker; Mr. Blakeney; Ward Blazzard, Kamas, Utah; Rulon Callister, Delta, Utah; P. B. Corbin, Monticello, Utah; Earle Crandall, Pinedale, Wyo.; Mr. Dickson; C. W. Haas, Big Timber, Mont.; C. M. Hart, Kingman, Ariz.; L. J. Hitchens, Ruidoso, N. M.; E. J. Jennings, Holbrook, Ariz.; Charles McLean, Kalispell, Mont.; D. A. McLean, Denver, Colo.; H. B. Norman, Gunnison, Utah; Victor Redman, Pagosa Springs, Colo.; Floyd L. Reyher, Haxtun, Colo.; and Grid Rowles, McCall, Idaho.

Members of the executive committee are Mr. Blakeney, Mr. Dickson, D. A. McLean of Denver, Colo., H. B. Norman of Gunnison, Utah, and Mr. Baker.

Arkansas Convention Emphasizes Need For A "Better Business Climate"

By LOIS KEHOE

Executive Secretary,
Arkansas Telephone Assoc.

"THE TELEPHONE industry is the strongest regulated private business in our land, one of the highest taxed and one of the most politically expendable," J. D. Garrett, Jr., outgoing president of the Arkansas Telephone Association, told some 300 delegates to the ATA annual convention at Hot Springs, Ark., September 14-15.

In his convention-opening remarks to the Arkansas telephone people, Garrett pointed out some of the perils that today beset the telephone industry. He followed up with five steps that telephone management can take to help cure some of these industry problems.

"Today, we find ourselves in this predicament," said Garrett:

"(1) — We are the strongest regulated private business in our land. Our city councils regulate us, our county judges regulate us, our state regulates us and our federal government regulates us. They have taken over numerous rights of management itself.

"(2) — We are one of the highest taxed industries, along with whiskey

Gus Lane Chapter of Independent Telephone Pioneer Association held breakfast meeting during Arkansas convention.

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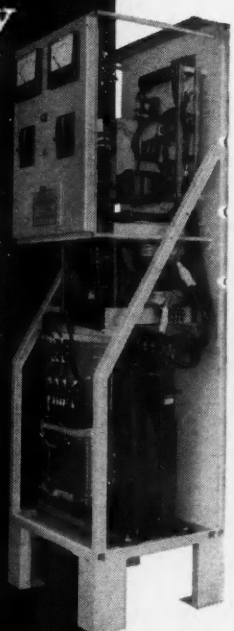

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and slot machines. The city taxes us, the county taxes us, the state taxes us and our federal government taxes us. And, in addition, they all tax our customers over and above what they tax us.

"(3) — We find ourselves politically expendable. One sure way of getting elected is to promise to lower the rates of all the public utilities."

Garrett said the answer to these problems is to "Build a Better Business Climate," (the theme of the Arkansas convention). To accomplish this, he suggested these ground rules:

(1) — Be ever aware that if your company is to prosper and be financially sound, you must recognize that you live in a political world and conduct yourselves to meet the challenge.

(2) — Inform your customers about your business and the telephone business in general.

(3) Tithe your time and effort toward building your community. Devote a minimum of 10% of your time and effort toward building your community economically, morally and spiritually.

(4) — Stand up and be counted on the side of right in any question affecting your community, business or family — even if it takes the "hide" off.

(5) — Furnish the best quality and greatest quantity of telephone service to your customers that is within your ability to furnish at a profit.

In further remarks, Garrett gave a resume of the progress of the Arkansas companies. He said that of the 61 Arkansas companies, 25 are now 100% dial. Eighteen more have announced definite plans to complete their conversions. Approximately 75% of the 205 Independent exchanges in Arkansas are now dial, and this tops all other states in the Southwest region, he said. In addition, Arkansas Independents will reach 100,000 stations by the end of this year, and one out of every four telephones in the State belongs to an Independent.

"From the above information, I draw this conclusion — Arkansas companies are moving ahead faster than our neighboring states in meet-

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Teeth, spurs and ribs cast integral with the body of each timber contacting component engage the wood members and distribute the load over a larger area, preventing bolt slotting, greatly increasing stability and thus increasing overall performance of the connection. By far the most efficient and economical method of attaching a push brace — and the easiest to install. Specifications and price data in our new telephone industry catalog.

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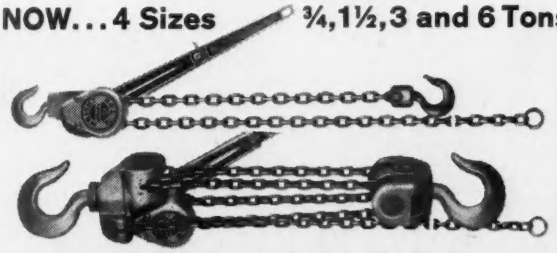
Each part precast with brace offset. Your TELEPHONE SUPPLY HOUSE or WRITE US DIRECT

New ¾-ton Type "C" Pull-A-Way

NOW... 4 Sizes ¾, 1½, 3 and 6 Tons



WRIGHT Type "C" Pull-A-Ways make easy work of hundreds of quick hook-up jobs. Now available in four sizes—¾, 1½, 3 and 6 ton—Type "C" Pull-A-Ways are portable, safe and rugged. Corrosion-resistant modern aluminum alloy castings are used for gear case, handle and covers of all models. Hooks, load chain and chain sheave are made of alloy steel. Positive, dependable load brake securely holds load at any point. Lubricated for life. Weights: ¾-ton, 14 lbs; 1½-ton, 23½ lbs; 3-ton, 36½ lbs; 6-ton, 63 lbs.

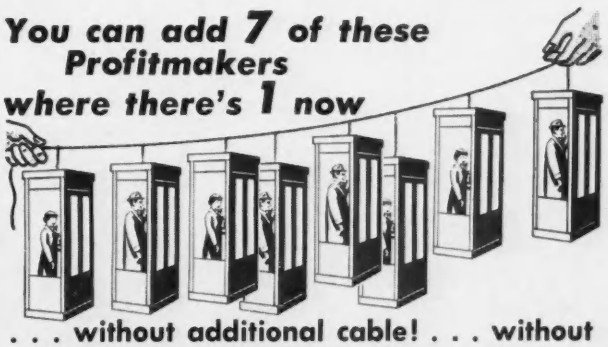
Write to our York, Pa., office for Bulletin DH-56A

WRIGHT HOISTS

Wright Hoist Division • American Chain & Cable Company, Inc. ACCO

York, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

You can add 7 of these Profitmakers where there's 1 now



. . . without additional cable! . . . without more open-wire lines! . . . without impairing or interfering with existing service!

TYPE 46-A POSTPAY PAYSTATION CARRIER

Offers Seven Carrier Channels on a Single Physical Circuit — Existing or New

The ideal, low-cost way to provide additional *high-quality* postpay paystation service — where wire facilities are not available — where plant expansion for such facilities must be postponed — where additional seasonal postpay paystations don't warrant expensive plant installation.

- Low first cost — simple, with minimum components
- Low operating cost — a complete channel uses only 9 tubes of 2 types, available at any radio or tv store
- 100% Recoverable, and easily.

Write or call us for Bulletin 359-A

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Telephone — HUdson 8-0655 (Area Code 614)

Small Company committee presentation "Sales and Frails" was highlight of recent Arkansas convention. Photo shows (l to r) "Pop" HODGES, director of the "Marked Tree Girls' Ensemble"; L. V. RITTER, JR.; members of the ensemble seated at desks, and MEL LADD.

ing the demand for telephone service," Garrett stated.

Delegates to the convention generally agreed that it was the biggest and best ever held in the state. Following through with the "Better Business Climate" theme, educational workshops were held and there were addresses by the popular young Advertising Manager of Arkansas Power & Light Co., Bob Wimberly, who stressed the importance of the "little services" in utility service; and Fred Pickens, dynamic young attorney from Newport, who declared that the "personal service" you give can never become obsolete.

The highlight of the convention was the Arkansas Small Company Committee presentation, "Sales and Frails." A musical theme was used to introduce bits of narration stressing ways to improve telephone business and margin of profit. The famed *Marked Tree Girls' Ensemble* sang original songs about telephone sales and service. "Pop" Hodge authored the script and directed the Girls' Ensemble. Narrators for the presentation were L. V. Ritter, Jr., Kay Adair and Mel Ladd.

New officers for the ensuing year are Leo Bryant, United Telephone Co. of Arkansas, Leachville, president; Omer Sanders, Yell County Telephone Co., Danville, first vice president; Ernie Wommack, De Queen Telephone Co., De Queen, second vice president; John E. Shaffer, Benton County Telephone Co., Gentry, secretary-treasurer.

The new President accepted the resignation of Lois Kehoe, who has been executive secretary of the association since 1950, and on behalf of the Arkansas members presented her with a diamond studded watch for her service.

Alaska Tel. Corp. Acquired By General Tel. & Electronics

GENERAL Telephone & Electronics Corp. has acquired Alaska Telephone Corp., according to an announcement by Donald C. Power, chairman of GT&E.

General acquired all of the outstanding stock of Alaska Telephone in exchange for common stock of General, Power reported. The exact purchase price was not disclosed.

Pointing out that General Telephone & Electronics is the first major company to own and operate a telephone system in Alaska, Power stated that "the acquisition will enable the General System to serve Alaska's expanding economy and to participate in the further development of the state's great potentials."

Alaska Telephone, which was incorporated in 1948, operates in four cities in the State of Alaska: Seward, Petersburg, Haines, and Wrangell. The cities of Petersburg, Haines, and Wrangell are located in what is commonly known as the Alaska Panhandle. Seward, which is one of the principal cities in Alaska and is considered to be the unofficial capital of the Kanai Peninsula, is an all-weather seaport and the terminus point of the Alaska Railroad.

Smith Replaces Coombes At S. W. Bell Tel. Co.

SPENCER D. Smith has been named Independent company relations manager for Southwestern Bell Telephone Company.

He will succeed Donaldson "Jack" Coombes, Independent company relations manager since 1930, who retired after 40 years of service on September 30.

In his new job, Smith will co-ordinate telephone operations and admin-

Registration desk at Arkansas convention was busy spot as over 300 registered for 2-day meeting.

SPENCER D. SMITH

istrative affairs between Southwestern Bell and the Independent telephone companies in Missouri and Western Illinois.

Prior to this appointment, Smith was a personnel development supervisor for the company and worked in its management development program.

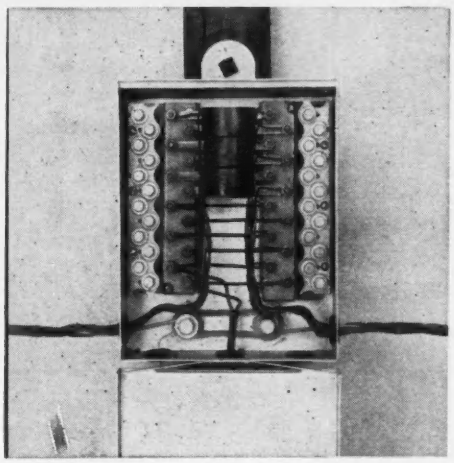
Coombes has spent his entire career with Southwestern Bell in St. Louis but is well known in Independent telephone company circles throughout Missouri and Western Illinois.

Since 1930 he has been responsible for co-ordinating telephone operations and administrative affairs between

"JACK" COOMBES

Southwestern Bell and some 270 Independent telephone companies in Missouri and Illinois.

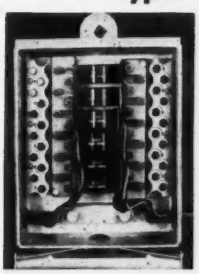
HERE IS OUR . . .
Type 177
TERMINAL LOADING CASE



for 6, 11, and 16 pair Rural Distribution Wire

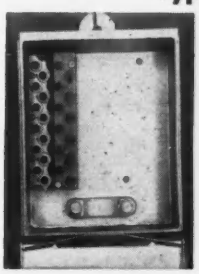
Cast aluminum combination terminal box and housing for loading coils. Designed to be used for rural distribution wire for 6, 11 and 16 pair capacity and available in 8 types to meet your requirements. Terminals are available with or without protectors and designed to accommodate loading coils of 88 MH or 44 MH inductance.

Types 177A-177B



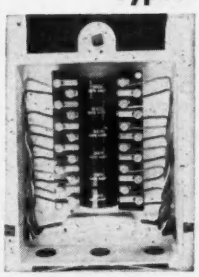
Contains two protected terminal strips complete with type 637A(88MH) or 637 B (44MH) coils.

Type 177F



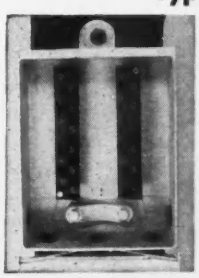
Contains one protected terminal strip —no coils.

Types 177C-177D



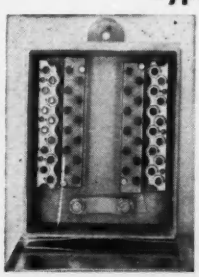
Contains two non protected strips complete with type 637A(88MD) or 637B(44MH) coils.

Type 177G



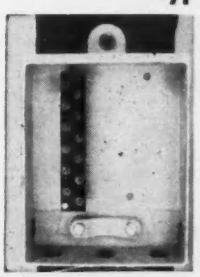
Contains two non protected strips — no coils.

Types 177E



Contains two protected terminal strips—no coils.

Type 177H



Contains one non protected strip—no coils.

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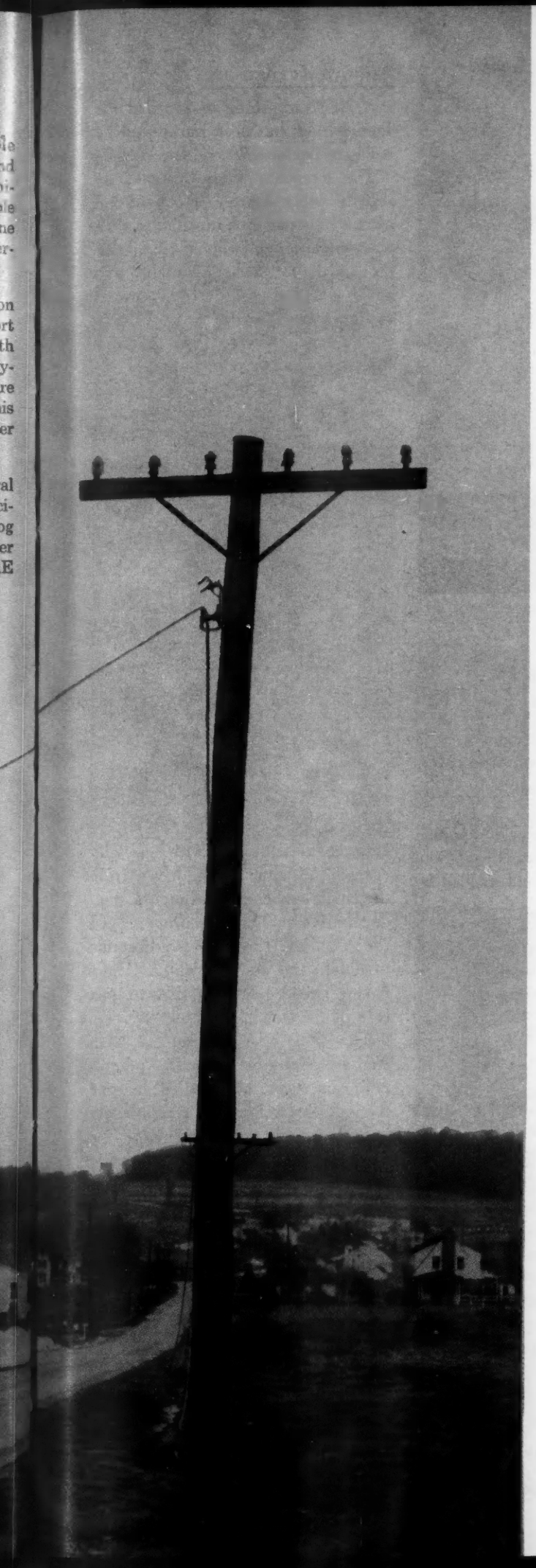
add more circuits fast, meet growing needs quick

with General Cable Distribution Wire and Cable

Rapid, low-cost installation! With General Cable Multi-Pair Distribution Wire and Cable you extend open wire lines or cable plant quickly and economically. On new construction you attach this cable directly to the pole. To increase existing pole line capacity, you simply attach this cable to the underside of a crossarm or directly to the pole.

Built to last! General Cable Multi-Pair Distribution Wire and Cable is really durable. The steel support wire has a breaking strength of 1800 or 2700 lbs. Both the support wire and the copper conductors are polyethylene insulated. What's more, the conductors are protected by a polyvinyl chloride jacket. And this jacket is fully color-coded. So, you get all-weather protection and fast identification.

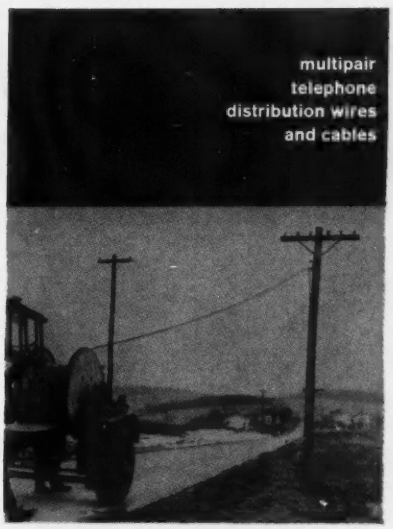
Easy to order! AE stocks various sizes of General Cable Distribution Wire and Cable (plus the associated hardware) in all its warehouses. Use the catalog offered at right for ordering information. Then order from your AE representative or your nearest AE Sales Corporation warehouse.



free!

NEW GENERAL CABLE CATALOG

You'll find full ordering information on Multi-Pair Distribution Wire and Cable in General Cable's new catalog. Ask your AE representative for a copy or write: *Automatic Electric Sales Corporation, Northlake, Illinois.*



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158 Corliss Avenue
Johnson City, N. Y.
SWarthmore 7-8507

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HArrison 1-7575

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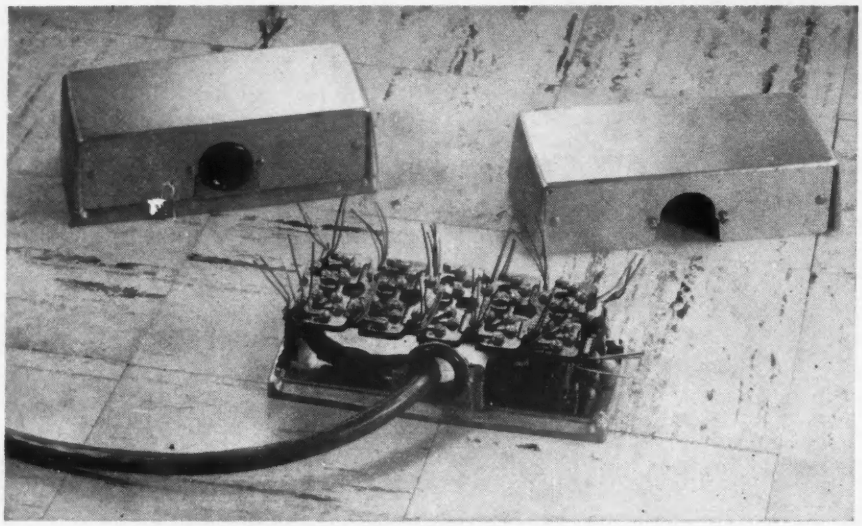
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS



New Telephone Outlet From General Electric Co.

NEW PRODUCTS' SHOWCASE

By DICK REYNOLDS

Telephone Outlet

A NEW six-block telephone outlet with buzzer mount for use with underfloor wiring systems is now available from General Electric's Conduit Products Department.

The outlet has been designed with extra-large wiring space that will accommodate large-sized communication cables, yet the over-all dimensions are only 3 inches by 9½ inches by 4⅝ inches. The housing is made of polished aluminum.

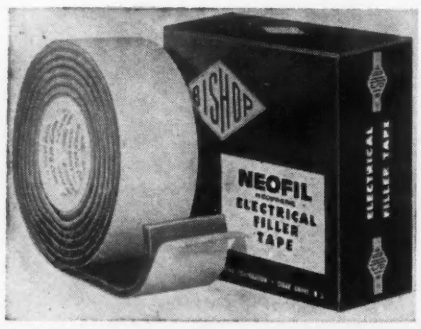
A distinct feature of the outlet is an L-shaped mounting bracket which takes six WE44-A telephone connection blocks but will hold up to ten blocks if necessary. This is made possible by the pivot design of the bracket which makes the extra wiring possible. Side indentations on the mounting bracket which match similar indentations on the telephone blocks provide added wiring space.

The bottom plate of the outlet housing has tapped holes for mounting a 7E buzzer and for installing cable clamps. Knockouts allow the installation of outlet in a choice of positions according to need. *NP* 308.

Neoprene Compound

A FORMULATED neoprene compound in tape form, called "Neofil," has been developed by Bishop Manufacturing Corporation. Neofil produces a solid wall of insulation with only one wrap and requires no covering tape, thereby saving material, time and labor.

The tape fuses rapidly on application into a single mass of insulation, which can be shaped and molded by



hand to conform to irregular shapes and contours. It is used over compression sleeves and all sizes of bolt type connectors. Also, it may be used for corrosion protection over lead cable splicing sleeves.

The tape is said to have good resistance to hydrocarbons, good electrical properties and resistance to weathering. It is also self-extinguishing. Neofil is individually boxed in rolls 1½" wide by 5' long by ⅛" thick, packed 24 rolls to case. *NP* 309.

Auburn Trenchsaw

A NEW trenching tool, called the TrenchSAW, has been introduced by Auburn Machine Works, Inc.

The TrenchSAW is designed to rapidly cut a narrow trench of approximately one inch in width to variable shallow depths as required for the laying of tubing, conduit, and small pipe for gas, electrical, water, and telephone service.

The saw is powered by a portable high speed, two cycle chain saw engine which can be easily detached and used for a chain saw. The dig-

ging chain equipped with specially designed digging bits is driven from the chain saw engine through a step-down drive to obtain the proper speed for trenching. The boom is adjustable to obtain the desired depths. A deflector shield piles the dirt to one side of the trench.

The TrenchSAW complete with engine weighs less than 70 pounds and can easily be handled by one man. A cast roller lets it ride easily over the terrain. *Check NP* 310.

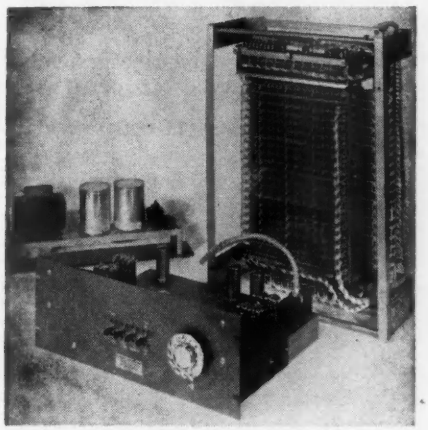
Crossbar Scanner

A NEW self stepping crossbar scanner complete with optional remote dial control has been announced by James Cunningham Son & Co., Inc. The unit was developed as a portable, high-capacity pilot plant or laboratory testing device.

Designed Model SC-5F, this scanner is a modified Cunningham Type F crossbar switch with simplified drive circuitry enabling it to connect

sequentially a six-wire circuit to each of 100 sets of six-wire terminals at up to 50 sets per second. The six wires can be further divided into single-, double-, and three-wire circuits.

Though the model takes up only 27″ of standard 19″ relay rack space



fully assembled with power supply control chassis and switch chassis, it is designed for reliable operation without service or adjustment over millions of cycles with low crosstalk between adjacent circuits at frequencies up to 10 megacycles. *NP* 311.

Anchor Kit

HOLUB Industries, Inc. has announced a new plastic anchor kit. Called the No. K-9 "Hi-RED" Screw Anchor Kit, it includes 50 No. 16 x 1″ and 10 No. 16 x 1-1/2″ "Hi-RED" screw anchors; 50 No. 14 sheet metal type screws, ten 1/4″ lag screws and one 5/16″ "Hi-Twist" masonry drill.

The contents are contained in a 7″ x 3 1/2″ x 1 1/4″ transparent plastic box that can later be used for storing small parts etc.

Applications include the installation of large conduit, ornamental iron, shelving, partitions, metal strips, small machinery, etc. Because plastic anchors are not affected by moisture, heat, cold or age, they can be used indoors or outdoors. *Check NP* 312.

First Aid Kit

THE ADDITION of a C-Thru window in the cover of the Davis First Aid Kit makes possible more effective and rapid inventory surveillance of first aid supplies.

Previous improvements include addition of a red cellophane zip-off tab, absence of which signalled an open carton that should be watched for replacement. This was followed by a C-Thru window on each individual carton so that contents became visible for inventory control. Now the window in the cover of the first aid kit makes inventory control even more certain and convenient. Through the window a glance reveals the contents

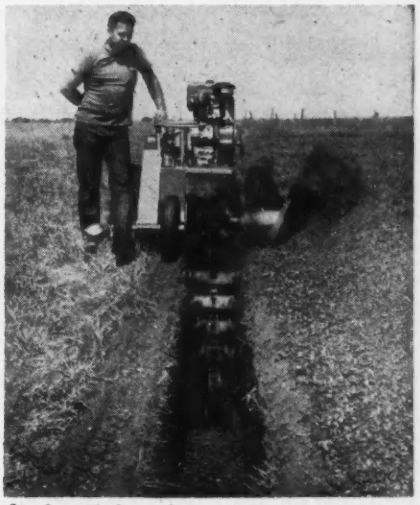
of each individual carton. Furthermore, plant safety is increased when the danger of running out of important supplies is minimized.

The new kits are designed for hanging on the wall, and can be quickly removed for carrying to the required area. *Check NP* 313.

New Ditch Witch Trencher

A NEW 12 horsepower model M-322 Ditch Witch that cuts trenches to 5 feet depths and 12 inch widths has been announced by Charles Machine Works, Inc. This is a completely new trencher scaled up from the model M-3 to handle wider and deeper trenches and tougher digging conditions. The model M-322 can now be used for foundation footings, sewer laterals, drain fields (double cut trench), water lines to 5 foot cover, gas services and main extensions, underground telephone cable installation, oil field gathering systems and salt water lines and many others.

The trencher is powered by a Wisconsin AGN 12 horsepower, air cooled engine and equipped to dig

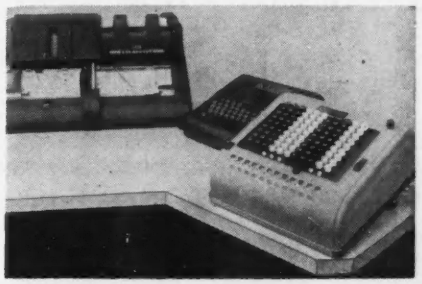


ditches 5 feet deep, 4 inches wide; 4 feet deep, 6 inches wide; 3½ feet deep, 8 inches wide; 3 feet deep, 10 and 12 inches wide, in any soil. *Check NP* 314.

Data Preparation Equipment

COMPTOMETER Corporation has introduced its new ComptoCard data preparation equipment. A new two-total solenoid operated adding machine was also introduced.

The ComptoCard machine, at right of photo, is used in conjunction with



the IBM key punch machine, at left, to combine calculating and key punching into a single operation. It is considered the answer to many "impossible" problems in data preparation.

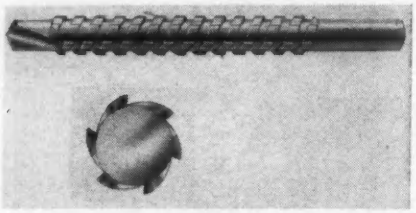
No additional Comptometer training is required. *Check NP* 315.

Drill Accessory Tool

A NEW electric drill accessory tool named Super SAW-DRILL has been announced by Durabilt Metal Products Co.

The drill contains six rows of cut-

ting teeth and is double-fluted for heavy duty. It has a negative rake angle for cleaner and faster cutting action, and more cutting edges which cut faster when moved in all direc-

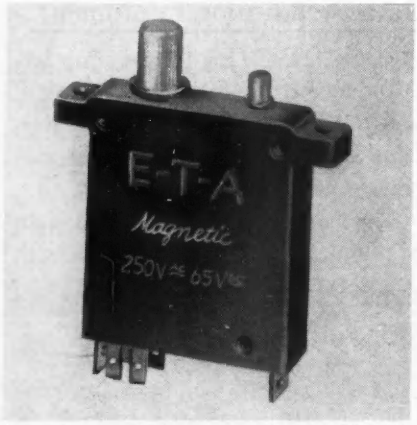


tions. It is self-cleaning, will not clog, and has no jagged edges for safe and smooth operation.

The tool is machined and ground from solid steel which is carbo-nitride super-hardened, and polished on both ends. A sharp drill point makes its own hole for fast starting of routing action. *Check NP* 316.

Telephone Circuit Breakers

A CIRCUIT breaker tailor-made for the telephone industry has been announced by E-T-A Products Co. of



America in their new series 43-500.00 and 44-000.00 miniature circuit breakers.

This circuit breaker is the first having form A or form B alarm contacts which are independent of the distributed service, permitting adjacent AC Power, or DC, or ringing frequency breakers to operate common alarm equipment without auxiliary circuitry.

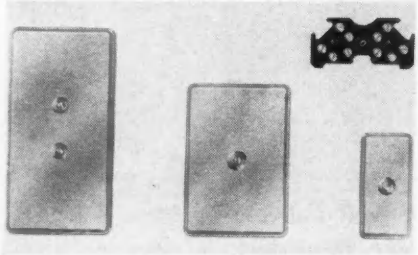
The item has thermal transient protection against "nuisance trips" allowing 15-25 sec. up to 300% rating but with instant 3 milli-sec. magnetic trip, at short circuit currents.

The unit is completely self-protecting on maximum short-circuit conditions for AC or DC applications up to 10 amps. *Check NP* 317.

Colored Plastic Covers

SUTTLE EQUIPMENT Corporation has announced plastic covers for terminal blocks in the new blue-beige color. They have heretofore only been available in brown and ivory colored plastic.

The blue-beige color has also been adopted as standard by the General Telephone System and, in addition



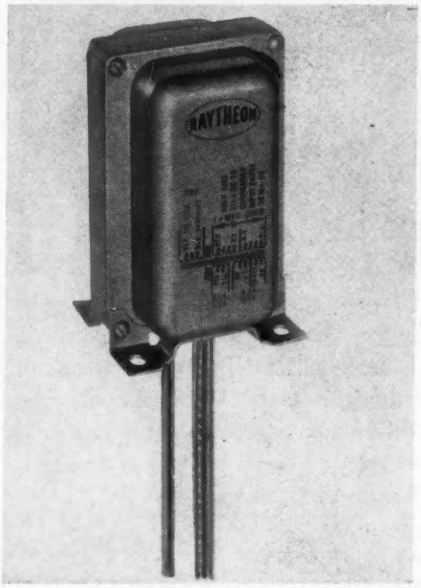
to ivory and brown, can now be obtained by independent industry operating companies from Suttle.

The blue-beige color tends to harmonize with almost any home or office color scheme and is virtually lavender colored in hue. Suttle backboards in matching blue-beige are also available. *Check NP* 318.

Voltage Regulating Transform

RAYTHEON Company has introduced a voltage regulating transformer that regulates electronic power supplies.

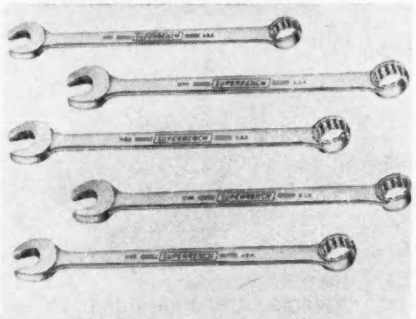
The new voltage regulating plate-filament transformer performs the same functions as a conventional



transformer while maintaining voltage within ±3 percent of rated output with line variations from 100 to 130 volts. Three standard models covering most power supply needs are stocked. *Check* 319.

Open End-Box Wrench

J. H. WILLIAMS & Co. has recently extended the size range of its open-end box type wrenches by the addition of 1 11/16, 1 3/4, 1 13/16,



1 7/8 and 2 inch and 12-point opening sizes.

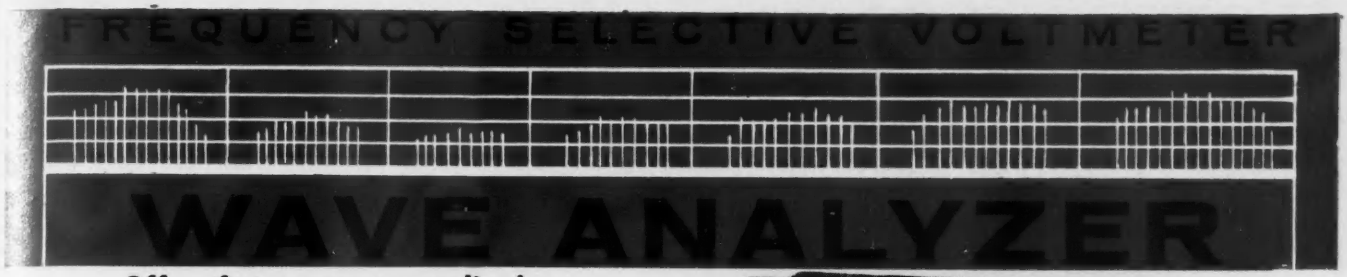
These wrenches are drop-forged from selected alloy steel, heat-treated and chrome-plated over nickel. *Check NP* 320.

NEW PRODUCTS' DEPARTMENT **11-15-59**
Telephone Engineer Publishing Corporation
7720 North Sheridan Road, Chicago 26, Illinois
Attn.: Dick Reynolds

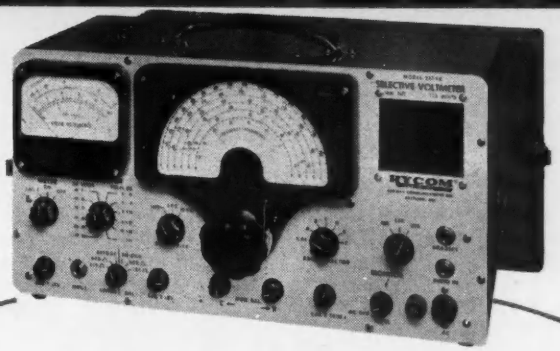
Please send me additional information concerning the following New Products.

NP 308..... NP 309..... NP 310..... NP 311..... NP 312.....
NP 313..... NP 314..... NP 315..... NP 316..... NP 317.....
NP 318..... NP 319..... NP 320.....

NAME ..... POSITION.....
COMPANY .....
ADDRESS .....
CITY ..... ZONE..... STATE.....



Offers fast accurate amplitude measurements throughout the frequency spectrum of 300 cycles to 400 Kc



This instrument utilizes the heterodyne principle with balanced modulation and highly selective crystal filters which achieve the high resolution needed for accurate amplitude measurements of Carrier and Microwave Sub Carrier channels.

Direct reading in DBM for 135 and 600 ohm circuits or bridging.

SPECIFICATIONS
Model 2174-A

Frequency Range: 300 cycles to 400 Kc. Level:—72 dbm to + 32 dbm (full scale) at 600 OHMS Accuracy: ± .5db from —80 to +32 dbm; 1 to 400 Kc. Selectivity: 6db down 80 cycles off: 60 db down 480 cycles off. Wider crystal filter and demodulator for monitoring SSB, AM, and FM—internal speaker and headset jack. Spurious Response: Below 60db. Low intermodulation: Below 60 db. Power Requirements: 115V, 50/60 cycles—48 Watts. Weight, 28 lbs.

RYCOM® INSTRUMENTS

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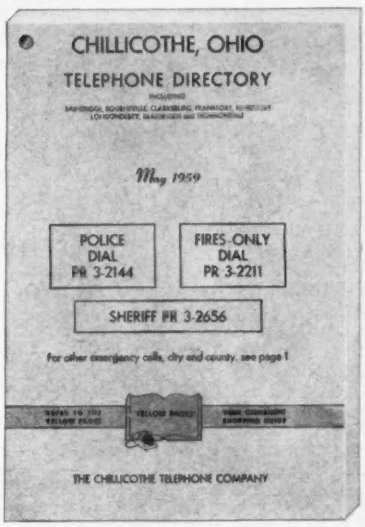

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Printed by

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basic electricity

by Van Valkenburgh, Nooger & Neville, Inc.

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MAN from 25 to 40 with general knowledge of dial equipment. Company has 2500 stations with a 1040 and type 7-1 Kellogg Cross Bar equipment in exchanges five miles apart. Job calls for a young man who would like to be his own boss. He would be in charge of the two dial offices with a retired Bell man of 35 years experience to help him. The company will send the proper man to Kellogg Schools on Cross Bar equipment with all expenses paid. This is a permanent job in a growing company as the job was vacated when its former holder died. Company is located on Lake Michigan in the Southwestern part of Michigan. Please send qualifications and salary expected to Box 88, c/o TE&M.

CABLE SPLICERS. Station Installers, Equipment Installers. Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1800 Johnson Street, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

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The TELEPHONE MARKET PLACE
TELEPHONE ENGINEER & MANAGEMENT
7720 N. Sheridan Road, Chicago 26, Ill.

11-15-59 (TE&M)

TELEPHONE MARKET PLACE

(Continued from page 103)

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TO: Company Managers

When you buy rebuilt products,
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WESTERN ELECTRIC No. 302 HANDSETS

These sets are equipped with No. 5-HA dials and Stromberg-Carlson No. D-2993 synchromonic ringers 30, 42, 54, and 66 cycles.

There are just 2500 of these sets available. We will sell "as removed from service" or reconditioned. Write or phone for prices today.

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TG-31 Teleg. Repeaters—Intermediate
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RA-87 120VDC, SEL.
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24, 120, 130 VDC
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#310-A Tubes, New
(Some others for use in above equipment)
Lamps, #A-1 (some others)
$16.00

SELECTORS, W. E.

60-AP, New $25.00
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one million in stock
(W.E., A.E., Kellogg, S.C., etc.)

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(hundreds in stock)
W. E. #12, New (CB & LB) — 5 Positions
(equipped as desired)
BD-110 (Signal Corps version of #12) with 15 univ. cd. ckts. (CB & LB) — 3 Positions
Many other Military types, also.
Kellogg CO manual boards, like new #—1600
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Cordless, CB & LB, new
5 x 12 CB, new #1007CCX $150.00

DIAL PBX

North, all relay, PX-80
80 line (50 equipped) **7 link (6 equipped)**
(complete with power supply, 48V)
12" x 51" x 81" overall, no provision for trunks.
A.E., Strowger switches, new, repeaters, relays.
(SAVE OVER ONE-HALF)

REPEATING COILS

(new)

W.E. 77A (substitute) C-161	$ 3.50
76A (two coils) 1:1 rat.	5.00
75A (better matched)	6.00
91A (double coil)	10.00
93A, B, F, G	12.50
70A ring-thru	5.00
27A non-ring-thru	3.00
25A two of above	5.00
94E non-ring-thru	2.50
94G	3.50
94H	5.00
101A	5.00
120C, CS, E, ES	5.00
Retard coils, 149E	3.00
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20A Repeating	$2.00
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FUSES, 35A, B, C, H, R, S. ..New, 10¢ ($9 hund., $80 thousand) 75,000 in stock (standard W.E. pack, 10 or 50)

REPEATERS, VF

— Dry Line Type —
TP 14 (portable) 2-4 wire
12-18 DB gain (resp.)
—intermediate or end
Ring By-Passed
115-240 VAC—12 VDC
Mfg. by Federal, etc.
Moisture-proof wood case—removable for 19" rack mounting
11"x18"x8"—46 lbs.
$500.00 Value—New—$125.00
Like New—$100.00
Also W.E. 3 — Circuit Type — New

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Plugs—Patchcords, W. E.
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Complete Toll Test Boards

All New Material (unless otherwise noted) priced F.O.B. Los Angeles
Shipped on Approval — Satisfaction Guaranteed

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NATCO CLAY CONDUIT provides permanent, low cost protection for Underground Telephone Cables. Available in a full line of shapes.

NATCO CORPORATION

327 Fifth Ave., Pittsburgh 22, Pa.

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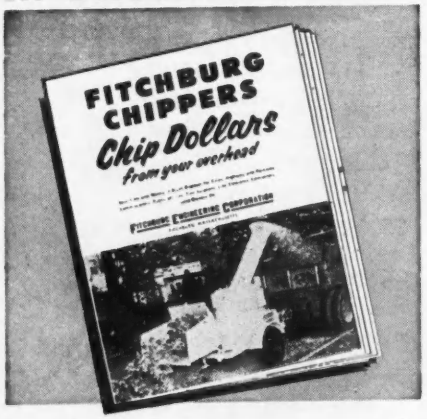

Read how foresters, tree surgeons, highway and park commissions, telephone, power and gas companies cut brush disposal costs up to 50% with a Fitchburg Chipper.

See cut-away color drawings of the Fitchburg Chipper—the exclusive Fitchburg spring-activated feed plate—pictures of different models in action.

FREE — Write for your copy of "Chip Dollars from Your Overhead." Address Dept. TEM-119

FITCHBURG ENGINEERING CORPORATION
FITCHBURG, MASSACHUSETTS

Saskatchewan Telephones Names Lee Chief Engineer

APPOINTMENT of S. F. Lee, as chief engineer, Saskatchewan Government Telephones, was announced recently by Hon C. C. Williams, minister in charge of Saskatchewan Government Telephones. Lee succeeds C. W. Sparrow, who was made manager of operations and engineering for the system.

Lee joined the engineering department of Saskatchewan Government Telephones on May 1, 1950, following graduation in electrical engineering from the University of Saskatchewan. He has been closely associated with the microwave installation in Saskatchewan and the system's dial conversion program. He is a member of the Engineering Institute of Canada, of the Association of Professional Engineers of Saskatchewan, and Institute of Radio Engineers.

John H. Landes Dies

JOHN H. LANDES, dial superintendent for the Citizens Telephone Co. Inc., Bridgman, Mich., died October 14 at his home of an apparent heart attack. He was 31 years of age. Mr. Landes and his wife Helen had just returned from the USITA Convention in Chicago.

Mr. Landes was born Sept. 27, 1928 in Clackamas, Ore. He served in the armed forces and then joined Kellogg Switchboard & Supply Co. as an installer. After advancing to foreman of an installation crew he joined the Citizens Telephone Co. in December, 1953.

Mr. Landes is survived by his widow and a daughter, Joanne.

Got Something to SWAP?

Look around. Have you something some other telephone man could use? A technical book? A slide rule? A test set? A tool kit? Want to swap it for something you can use? As a service to TELEPHONE ENGINEER & MANAGEMENT readers "SWAP" ads from telephone industry members will be accepted FREE OF CHARGE. Just describe the item you want to "Swap" on the "Swap Ad" coupon and mail it to "Swap Department," TELEPHONE ENGINEER & MANAGEMENT, 7720 N. Sheridan Rd., Chicago 26, Ill. Your "Swap Ad" will be in the next issue with our best wishes for some "Happy Swapping."

"Swap Department" **Date:** .....

TELEPHONE ENGINEER & MANAGEMENT
7720 N. Sheridan Rd., Chicago 26, Ill.

Please publish the following "Swap" ad free of charge in the next issue of TELEPHONE ENGINEER & MANAGEMENT. The item is in good condition and I am ready to "Swap" it for something I can use.

Item: ..... **Description:** .....

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Will Trade For: .....

NAME: .....

Company: ..... **TITLE:** .....

Street: .....

City: .....

State: .....

11-15-59 TE&M

STROMBERG-CARLSON

Transmitter

A DIVISION OF GENERAL DYNAMICS CORPORATION

News and views of Independent telephone people. VOLUME 8, NO. 8 • NOVEMBER, 1959

New stand-by teammate for 561 Carrier— keeps your service on when power's off

Now, if power goes off, your carrier service stays on — even under most severe conditions.

You know how loss of power can raise havoc with carrier service. Stromberg-Carlson has designed a new stand-by power supply that puts an end to the problem. This efficient unit stands ready to power your 561 Subscriber Carrier a full eight hours, providing top-notch subscriber carrier service even when regular power is completely dead.

Unlike other stand-by units, this one works efficiently over a wide range of temperatures, 140°F to —40°F. It can power a five-channel system under full talk for eight hours at 40 below zero without harming batteries or charger.

The batteries start recharging the instant normal power is resumed. This is accomplished by means of a heater which keeps the charger ready to go in coldest weather, greatly speeds up recharging, and extends useful battery life.

The Stromberg-Carlson Stand-by Power Unit can look tough weather right in the eye. Housed in a sturdy Fiberglas insulated metal box, it is thermostatically controlled to counteract temperature variations. You can mount it conveniently right beside your carrier unit. There is easy access for specific gravity readings. Usually, water need not be added except in very hot climates.

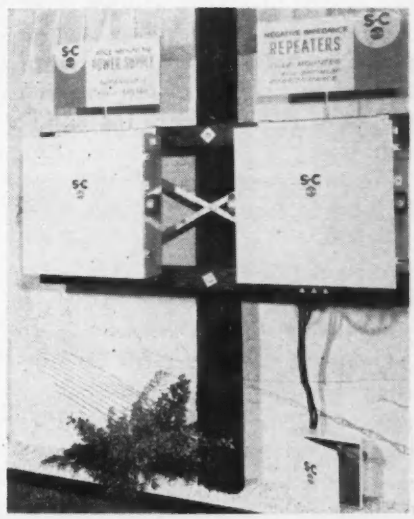
Safety has been designed right into the stand-by unit. Proper top side ventilation is provided to remove hydrogen gas given off during charging or floating periods. All possible sparking points are enclosed as an added precaution.

Another application for this unit is as stand-by power for pole-mounted 541 Negative Impedance Repeaters. It offers the same advantages in this usage as with carrier.

Some companies are now using a multi-channel subscriber carrier unit as a distant terminal of a trunk line, built out toward an isolated region (see July, 1958, TRANSMITTER). The carrier terminal thus becomes, for practical purposes, a C.D.O. — but without the battery source which is standard in a satellite office. Here is a natural application for the Stand-by Power Unit — ready to take over operation during the period of outage.

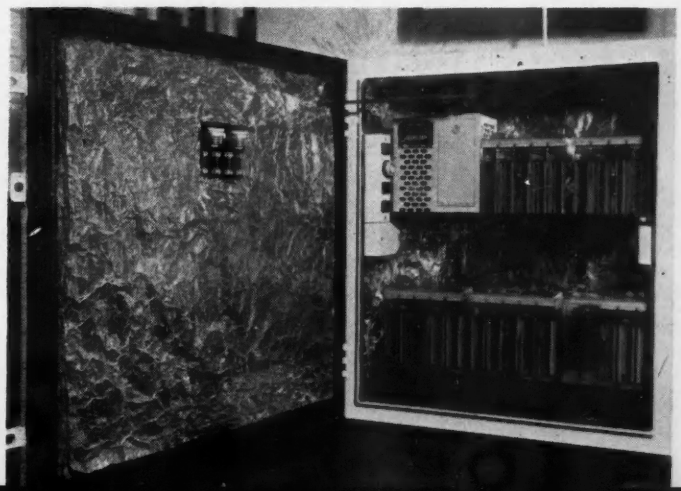
To meet your different needs the stand-by power supply is available in two types. The first is capable of powering five subscriber terminals for eight hours. The other can power one subscriber terminal — with provision for growth to three terminals — for the same period.

Each type has an a-c accessory strip which permits the operation of worklights and other instruments. Both types offer you an easy and economical way to give your subscribers uninterrupted service in almost any situation.



The Stand-by Power Unit has perfect application with negative impedance repeaters as well as pole mounted carrier units. You see it here as displayed at the USITA Convention last month.

Simple design of the Stand-by Unit makes installation a snap. The heater at bottom, Fiberglas insulation and heat-reflecting aluminum sheets let the unit perform efficiently under toughest conditions. One of the features of the convention, the unit is now available to help you provide top subscriber service.



Advertisement

Decatur, Arkansas: The town that wouldn't die

It doesn't pay to fool around when you're fighting for your life. Folks in Decatur, Arkansas, knew this. They rolled up their sleeves and dug in for a last ditch battle with hard luck.

There's not much doubt that they've won the fight. But no one's taking any chances. They're still battling.

For Decatur, hard luck was a black sheep relative. It stopped for a visit just when it wasn't wanted. In 1953, this northwest Arkansas town lost its only big industry — a poultry processing plant. This company, which employed nearly all of Decatur's 130 men, moved to a nearby town. Both state and federal agencies turned thumbs down on a loan for the hard hit community. One of the reasons: "We never make loans to towns that small."

The town was small (population 350), but its heart wasn't. Almost immediately a civic group, called the Decatur Development Co., was formed. Working together, the group raised enough money to provide an up-to-date sewage system for the processing plant. With this major improvement completed, another poultry processing company was quickly attracted to Decatur.

Results of the town's struggle are pretty impressive. The new processing plant, a bank, a modern grade school are part of the success. And the telephone exchange soon to be cut over to dial is a sure sign that community progress isn't slowing down. Mr. William Schmidt, owner and manager of the Decatur Telephone Co., has confidence that this progress will continue. His company is growing with the town.

Soon after the processing plant started operating, a company to raise the broilers was established. Then a hauling firm was added to deliver the finished product. Things were going well.

It was then decided that a bank was needed. Decatur hadn't had one since the Depression. Again a loan was requested. The same reply came back with the refusal — "Too small for a bank."

The bank is now six years old. Almost everybody in Decatur owns a part of it. Shares were sold to enthusiastic buyers and nobody is worried about the soundness of his investment.

To get back on its feet, Decatur needed money. Sacrifices were made to make the necessary amounts available. This part of the effort cannot be overlooked. But more important still was the confidence, the faith and the drive of the townspeople. There was no room for pessimism. And now there is no reason for it.

As the storybooks say, good work doesn't go unrewarded. It didn't in Decatur. In addition to its own personal satisfaction, the town has won praise from outsiders. It won first place for towns with less than one thousand people in the Arkansas Community Accomplishment Contest.

Later, Decatur was named an all-American city when it again placed first, this time in the National Municipal League contest in Kansas City.

This year at Thanksgiving, as in the past, Decatur's menu will be a little different from others throughout the country. Chances are the people will be eating a favorite dish, home-grown chicken. But the thoughts of Decatur on Nov. 26 will be, like ours, on the real meaning of the day — that the right to work for what we want in a free nation is something to be very thankful for.

Thomas Edison still ahead, but Stromberg–Carlson engineers compile enviable patent record

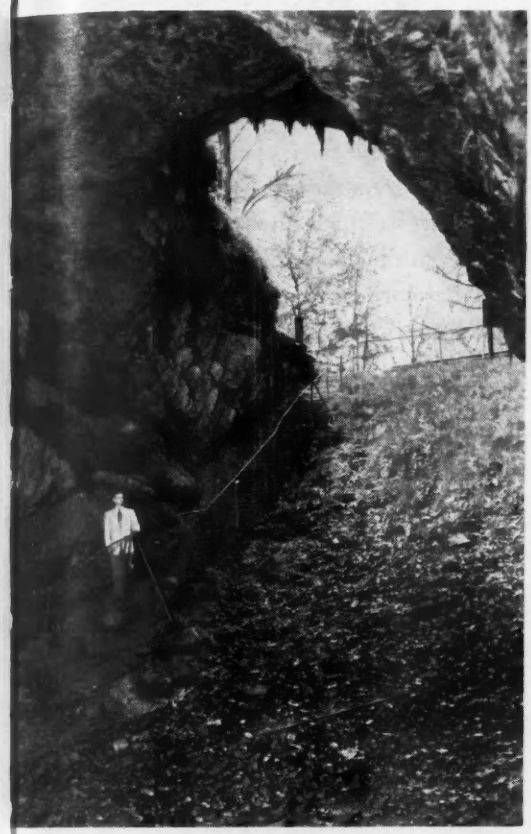
"Thomas A. Edison's record for most patents granted — 1,096 — is still pretty safe. But in the telephone field Stromberg-Carlson engineers can be counted with the very best."

John H. Voss, vice-president, and Theodore L. Bowes, assistant secretary and general patent counsel for Stromberg-Carlson, a division of General Dynamics Corporation, did a little research prior to a Recognition Dinner for some of the company's top idea men. Mr. Voss — himself the holder of 61 patents in the telephone art — had to bow to one of his men, William Pharis, who is now credited with 68. The record indicates that only two men in the telephone field have so far exceeded this number — one of these was a former Stromberg-Carlson inventor.

Others who were recognized for their accomplishment included Frank A. Morris, director of telecommunication research, well known as a convention speaker at telephone gatherings; and Ernest H. Gatzert, who is best known for his designs in system testing and in the expanding field of industrial communications.

L-R: J. H. Voss, Wm. Pharis, F. A. Morris, E. H. Gatzert, T. L. Bowes, at Recognition Dinner for inventors.

Tunnel to treetop: Scenery plus service point way to success



They call it Mammoth and it's well named. This natural entrance to the Cave was reportedly discovered by a bear hunter in 1799. Millions of people have passed through this huge opening on their way to sightseeing adventure.

Photo by W. Ray Scott
National Park Concessions, Inc.

Near Lemon Cove, giant sequoias reach out to touch the California sky. At Mammoth Cave, Ky., yawning caverns invite tourists to explore their depths. Two places as different as up and down, but with a couple of fine things in common — scenic beauty and telephone service.

Mammoth Cave Telephone Co., recently cut over telephone facilities at the famous park that it serves. The XY® Dial system will improve telephone service for park personnel and aid their effort to increase the enjoyment of thousands who visit the Cave each year.

Mr. Dennis Armstrong, area manager of the Mammoth Cave Telephone Co., has provided another outstanding service for park employees. The elevator that is used to carry food supplies from ground level to the famous Snowball room below is equipped with a telephone. Persons using the elevator may place calls while the car is in motion, thus saving time and extra steps.

The Mammoth Cave installation is only one of several locations where Mr. Armstrong has improved service through dial facilities. Exchanges at Park City, Brownville and Smith Grove are among those now enjoying the convenience of dial.

Lemon Cove, Calif., is a gateway to Sequoia National Park, where many of the giant trees stretch skyward 300 feet. This park, too, is a lure for thousands of yearly visitors.

In the last few years, though, Lemon Cove has become noted for another type of tree. Citrus fruits have found a fertile home there. A town of 600, Lemon Cove continues to expand, and telephone service is growing right along with it.

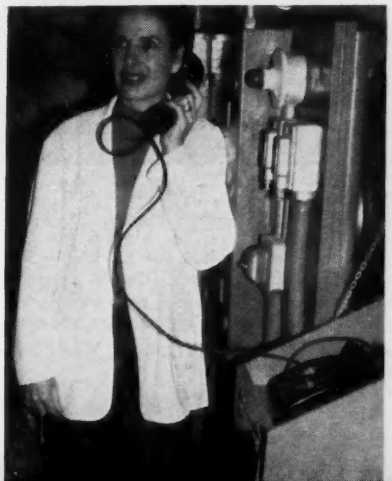
Recently the Lemon Cove exchange of the Central California Telephone Co. was cut over to XY Dial. President J. P. McGuire has great faith in this area and plans further expansion. He has tentatively scheduled several additions in his program of better telephone service through dial facilities.

Service for subscribers, scenery for sight-seers, the Cave and the Cove have both — a winning combination.

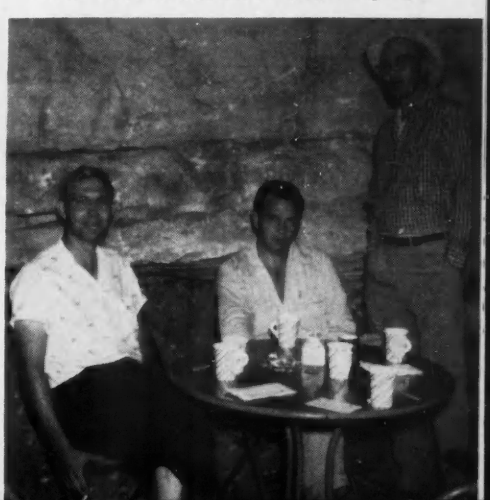
XY marks the spot. Steve Lynch, right, manager of Exeter district, and Lloyd Aldrich, plant superintendent, appear to be in agreement at Lemon Cove, Calif. Roegner Cushing, Stromberg-Carlson representative, left, looks on.

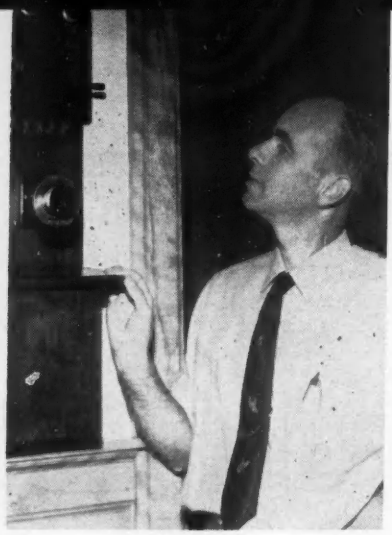
To Perry Brown, left, park superintendent, goes the honor of throwing the switch at the Mammoth Cave cutover. Looking on with well earned satisfaction are, l. to r., Dennis Armstrong, area manager; William Thomason, general manager; and Gene Dunn, central office equipment superintendent, all of Mammoth Cave Telephone Co.

Mrs. W. Ray Scott, manager of the famous Snowball room, appreciates the convenience of an underground telephone. In case of emergency, it's assuring to know that a phone is nearby.



Here's a coffee break with atmosphere. Talking things over in the cave with John Cox, REA central office equipment engineer, right, are Dennis Armstrong and Gene Dunn of Mammoth Cave Company.





"Let's keep one, to remember." John Connor of Winthrop, Maine, has almost finished his last dial conversion. Before long the young people, used to completely modern service, will wonder what a magneto telephone looked like. Businessmen and vacationers have responded to the improved service Mr. Connor is now supplying this Central Maine area.

Postman's Holiday No. 3

By whatever state of the Northeast

It's hard to choose between pie and ice cream. You'd like to take them both.

We did.

Back from Dixie, much laundry washed, an issue of the *Transmitter* and a few other editorial jobs dispatched, your reporter set about to chart this second assignment — New England, and that closely related portion of New York bordering Lake Champlain. Through splendid cooperation of the customers, the itinerary was compressed into five "working" days and three week-ends. Distances are shorter, but the inclination to prolong each visit remained as the chief hurdle to be cleared.

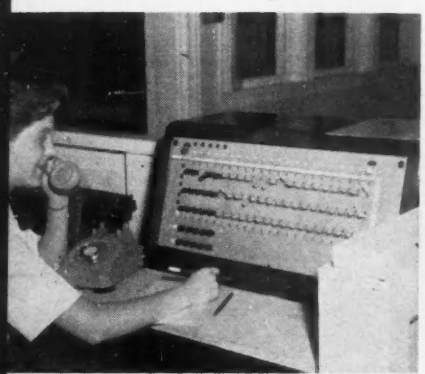
Continuing the pattern of the two preceding issues, these pages are an illustrated table of contents for the chapters to follow. We will visit the oldest active telephone executive; one of the youngest chief operators; the place where Alexander Graham Bell could have seen his first experiment already working. We'll see a ski-lift carrying more passengers in summer than winter; watch telephone cable reels being constructed; feel the weight of a solid silver saddle for an all-time best-of-show hrose.

We'll hold our breath as a baby

Alston Mugnier (right) operates one of only two Independent companies left in Massachusetts. His Granby office, on edge of Holyoke and Springfield, grows as these cities prosper. Here, with his accountant, Robert Henneman, he looks over proposal for adding more EAS trunks.

"Six motels here today — next time there will be another." Thus George Beckwith of Keeseville, speaking about the mushroom-like growth of tourist business in the Au Sable Valley region of northeast New York State. Fortunately, the influx is spread out over the year. A new toll center is planned.

"If I ever did have trouble . . ." Clarence Todd, manager of Oxford County Tel. Co., shows visitor his Turner, Maine, exchange — said it had been some time since he'd gone there. Area is well balanced between industry, farming and suburbanites; company was second in state to provide dial service.



"I'll connect you with the Program Director." Mount Washington TV has studio and general offices at Poland Springs, Maine, in one building of nationally famous resort hotel. Service improvement meant growth for Poland Telephone Company. Mr. C. W. Ricker manages this system.

"Through for the day." Ken Bayle and Don Pepper return to headquarters at Westport (New York) Tel. Co. Their biggest job — readying the outside plant for XY Dial — is over, but growth continues. Gerald Forcier, manager, has typical resort problem: service demand doubles during summer season.

Unity Telephone Company covers a long, narrow strip on Route 202 in Central Maine. One chicken hatchery — largest in state — now generates more revenue in tolls than total company receipts some years back. A 6K System was recommended by phone company manager H. M. Brown for efficiency.

name you call it, the varied charm extends its grip and holds you fast

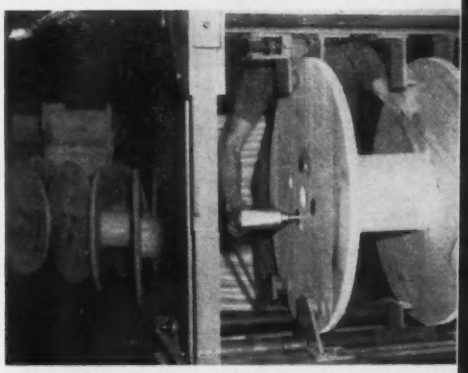
chick pecks its way out of his shell; learn how it feels to be *the* Independent island; strain our eyes toward the top of the tallest structure ever built by Man. We'll see where skilled workmen spend a week cutting one block of stone; relive history that began 350 years ago; be shown the first all-plastic church spire ever made.

We'll be warmly welcomed by a manager who next day entered the hospital; be envious over a half million in yachts riding in one harbor; establish a new record for getting in and out of a foreign country.

And lobster . . . . where and how it should be served.

And mountains . . . . inviting us to a return climb.

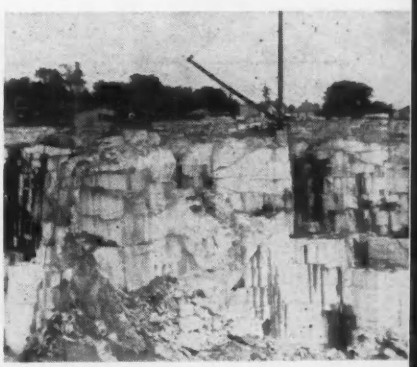
And people . . . . warm, genuine; with the lines of experience in their faces and hands that are acquainted with toil.



Every telephone man recognizes a cable reel when he sees it; not many have watched them made. Shop is in North Anson, Maine, headquarters for Kenton Quint's Somerset Telephone Co. Known as "Mr. Independent" in this state, Mr. Quint acquired 12 bankrupt exchanges — developed them into one solvent system.

Oldest active telephone executive . . . anywhere! Mr. Sam Shepard of Bar Mills, Maine, president of the Saco River Telephone Company. We unsuspectingly walked in on a party to celebrate his 102nd birthday, staged by Mr. Harold Carroll, manager. Notice Mr. Sheppard's favorite magazine.

"Borderline Company." When you leave the Champlain (New York) Telephone Co. area, you're in Canada. Three ports of entry develop millions in customs. Large factory here makes machines for binding telephone directories — has recently ordered XY-PBX to handle world-wide business.



World's largest granite quarry is near Northfield, Vermont, where George Goodrich has a busy XY Dial office. To give better service and match growth, office will move to larger building. Norwich University, in midst of its own expansion program, helps steady town's economy, telephone business.

"Summer help." Attractive Patricia Lewis, daughter of the H. O. Lewis's, owners of Crown Point (New York) Telephone Company, is chief clerk during college vacation. Company — while small — was one of first in the area to have dial service; is superbly run as a family enterprise.

"Calendar scene." Village of East Corinth, Vermont, is a favorite subject for calendar photos showing typical country village. One of four towns served by Topsham Telephone Company — H. L. Tomlinson, manager. Generally restful atmosphere contrasts with two busy mills "just out of sight."

Loren P. Rand, president of the Chester Telephone Company, presently operates three exchanges in New Hampshire. The Chester office went XY Dial with the first R.E.A. loan made in this state — is also believed to be oldest, with a private telephone line in operation while Alexander Bell was still experimenting.

Customer-requested features of pole-mounted Negative Impedance Repeaters and Stand-by Power Unit are demonstrated by Harold Clark (right), assistant chief sales engineer, to Fred McGrady of Burlingame, Calif., and W. L. Mollands of Atlanta, Ga.

Central feature of main Stromberg-Carlson display was Toll Ticketing exhibit. Interest in this system is mounting steadily, will call for careful scheduling to meet growing demand for the only equipment offering the advantages of magnetic tape, unattended remote read-out.

No hotel would be big enough to hold all the people who would like to go to U.S.I.T.A. Conventions. For the majority of us, this is a chance to see what others saw in the "Best-of-the-show" Stromberg-Carlson display rooms.

You would have stopped here: mor

"I need something like this once a year just to remind myself that our industry never stands still."

Thus a visitor to the Stromberg-Carlson display at the recently concluded U.S.I.T.A. Convention pretty well summed up the purpose of the gathering.

"You can understand a new product better after you've handled it. I got the information I wanted."

A little more down to earth, but it marked the attitude of people in these rooms. They came because of serious professional interest. They wanted to visit the Stromberg-Carlson rooms because of this company's unique position in the industry. They brought with them the critical judgement of independent operating executives.

Everywhere you saw small knots of earnest men, asking questions about features, applications, of those who were competent to give them the answers.

In those fields where Stromberg-Carlson is the acknowledged leader, hardware was convincing evidence of goals reached. In other areas where progress has been more general, the company stands by the only policy it ever had: to offer a superior product.

If your Stromberg-Carlson friends *didn't* have a chance to welcome you, they missed you. Be there next year.

At St. Louis, Missouri —

Modern communications help fight fires fast

When fire strikes, it often brings along a grim companion, panic. Sometimes this panic causes more damage, more lost lives than the fire itself.

City officials in St. Louis have taken a big step toward stopping fires faster and cutting the panic possibility. They have installed a modern fire-reporting system, one of the fastest in the country.

This new system, with a Stromberg-Carlson XY automatic dial PBX as its heart, now quickly handles fire reports from all parts of the city. It forms a tight link between these reports and the immediate dispatch of proper equipment to the location of the fire. By doing this, the system instills confidence in St. Louis residents. If fire does come, they can be sure that help will quickly follow.

The PBX provides for two means of public fire reporting. Calls may be made from a home phone or from pole-mounted fire-reporting stations. The 150-line XY equipment also handles internal voice communication for fire, police or civil defense personnel. This is accomplished with the use of intercom phones located at key administrative points throughout the city.

If an emergency arises, any firehouse can call the Attendant's Manual Switchboard even when dial lines are tied up. Fast contact is accomplished by pushing a red button on the instrument. This lights a lamp on the switchboard indicating that the fire house line should be plugged into immediately. The instant connection cuts delay to a minimum and may provide the extra seconds needed when a life hangs in the balance.

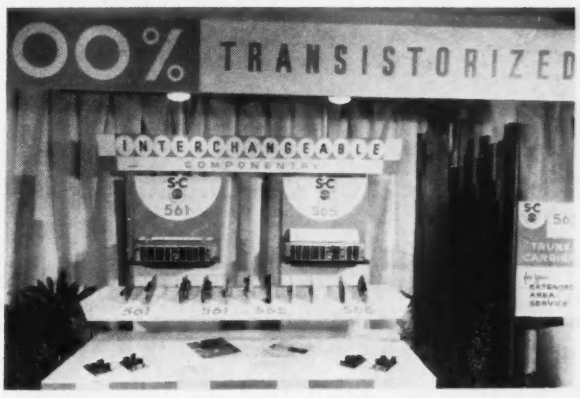
The PBX is primarily designed to speed fire information. However, this is not its only use. Housed in a semi-bombproof and fully fireproof building, it can handle almost any emergency.

In addition to its valuable aid in faster fire fighting, the system serves as an attractive civic showcase. Open to public observation, the glass-enclosed mechanism stands as a dynamic symbol of a city's progress.

re: more people did!

Ralph Hackbusch (left) of Toronto, Canada, is given an especially warm welcome by Ray Weis, who once again was principally responsible for the Stromberg-Carlson exhibits.

This eye-stopping display commanded attention as you entered the Stromberg-Carlson suite. An instrument for every purpose — featuring graceful styling, superior transmission, full range of colors.



Interchangeability was the keynote in twin display of 561 Subscriber Carrier and 565 Trunk Carrier. Problems of inventory and maintenance disappear with these units, since majority of components are identical.

For happier subscribers –

New equipment lets you train, without pain

Poorly trained operators often cause subscriber complaints. To help you avoid this, Stromberg-Carlson has developed a new operator training aid. Its purpose is to teach your operators to provide the excellent service that brings you compliments, not complaints.

The training aid is a combined keyset monitor and service-observing circuit which will be located at the end position of the toll board multiple. It eliminates the need for a service-observing desk and helps you keep costs down.

Without moving, the chief operator or other supervisor is able to check the work of any operator. Positions monitored may be changed simply by removing a jack and plugging into another position.

Lights on a vertical display panel will clearly indicate any operator fault in keying or other procedures. The observer may talk over the monitoring path, pointing out the error and improving operator techniques.

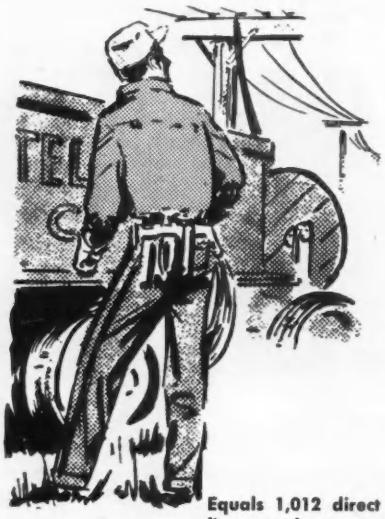
No register will be made on the display panel if the position plugged into is already keying a call. Registrations begin when the position monitored handles a new call. Lamp signals lock in giving an accurate picture of how the call was handled. These signals may be removed at the completion of a call or sooner by use of a release key located on the monitor set.

If the observed operator erases the keyed information and starts keying again, the lamp signals also restore and reregister.

The training aid is suitable for use with the Stromberg-Carlson #3 Toll Switchboard or the Manual Identification (MID) system used in Toll Ticketing. No revision of existing switchboard circuits will be necessary except for MID units not arranged for service observing.

Since this equipment is associated with custom-engineered facilities, inquiries should be addressed to National Sales Engineering, Rochester.

Telephone linemen get first salute in ad series on Denim Workers of America



Equals 1,012 direct lines to the moon.

Denim-clad telephone linemen have strung enough wire in the United States to equal 1,012 direct lines to the moon! The more than 65 million telephones in service today are exactly 1 1/2 times the *total number of people* in the whole country when Alexander Graham Bell made his discovery.

These phones ring more than 10 million times an hour for a total of 85 *billion* times a year — and the figure is still rising. Without this lifeline of communication uniting all of America, business would come to a standstill and home life would be intolerably bleak, if not actually unsafe.

It is certainly a distinct tribute to these faithful workers in dungarees that the Denim Council chose our industry for its first salute to the craftsmen of America — one of a series of ads now running in national magazines.

Possibly Thanksgiving is as good a time as any to remind ourselves of the many blessings we take for granted. Certainly high on the list is our dependable telephone service.

Schedule beaten on difficult assignment

The difficult usually takes a little longer. But Stromberg-Carlson engineers, production and installation personnel beat their schedule in delivering two mobile field-communication centers needed for important Army maneuvers late this Fall.

Conventional XY® Dial equipment and a manual switchboard are housed in an Army-supplied trailer. The specifications called for 100 lines of machine switching, 60 lines of combination Common Battery and Magneto, 40 trunks, and 100% trunking, so there could never be a busy line. All necessary auxiliary equipment is built into the trailer, making a complete mobile central office.

In Rochester to inspect the XY Dial Trailers are (L-R) Capt. John B. Sauer, Ft. McPherson, Ga.; Major George C. Gunn, Ft. Bragg, North Carolina; Mr. I. Yosovitz of Stromberg-Carlson; Mr. Aubrey Smith of SCEL, Ft. Monmouth, N. J.

Ivan Watson, Stromberg-Carlson (right) calls attention of M. H. Abernathy and Aubrey Smith, both of SCEL, to special shock mounts for bay frames.

Foursome catches breather

Traditionally Rochester area telephone men gather once a year to swap stories and play a bit of golf. Branch Manager Joseph S. Ottalagana was host to the group. Here we see Baxter Case of Chardon, Ohio; Colby Knapp; Ray Lloyd of Manlius, N. Y.; Malcolm Griswold of Phelps, N. Y. Mal Griswold's son Bob again took the trophy.

HAPPY
THANKSGIVING

Transmitter

GEORGE B. FORBES, Editor

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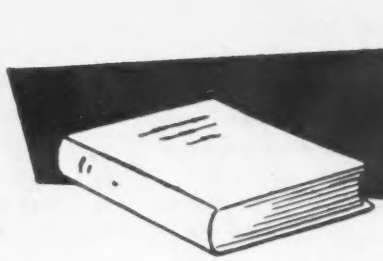


THE BACK OF THE BOOK

By JOHN G. REYNOLDS

"Cool As a Cucumber"

WE UNDERSTAND a Houston, Texas subscriber recently made what seemed a reasonable phone call to her Bell office.

She explained that her husband had just been killed in an accident and said she could pay her bill in two weeks.

Three weeks later when the service representative still hadn't heard from the lady, she started trying to call the subscriber, but to no avail.

Finally she solved the mystery by calling a neighbor. "Yes," the neighbor said, "her husband was killed, all right, but it wasn't an accident. She shot him the same day she called about the bill."

Their Middle Name Is Service

EXAMPLES OF the efforts to which operators go to connect a subscriber to his party are legion — every telephone company has a store of anecdotes on the subject. This experience of Verletta Alexander, a Lincoln (Neb.) T. & T. Co. operator, serves as a tribute to all conscientious operators:

A man had been found dead in his home at Lincoln by a neighbor, who placed a call to the deceased's sister, a Mrs. Johnson, of Omaha. A call to the Omaha telephone reached a temporary disconnect. The sister was out of town on vacation.

The calling party remembered that Mrs. Johnson had a son who was a Presbyterian minister in Omaha; so Verletta began calling the ministers of that denomination one by one. On about the seventh try she reached the right telephone only to find that he was also out of town. But the minister's secretary knew his mother was visiting the Smiths in California. She thought a relative in Lincoln might know where the Smiths lived.

Now Verletta only had to find the right Smith in North Hollywood. So at long last and many Smiths later, the party was reached. The hour and a half of detective work had not been in vain.

"Pleased With The Service"

THE EDITOR of Southwestern Bell's *Telephone News* reports that when it comes to old-fashioned neighborliness, it's hard to beat the Kansas customers. Take the case of Mason McComb, a farmer who lives at Zenith, a small community served by the Stafford exchange.

McComb likes the service and decided he'd try to show the telephone folks at Stafford just how much he likes it. So, he turned up in the operating room one afternoon toting a freezer of homemade ice cream, a cake, and a big supply of just-picked strawberries.

Shortcake was the order of the day and even off-duty operators were called in to join the surprise party.

"Too Much Of A Good Thing"

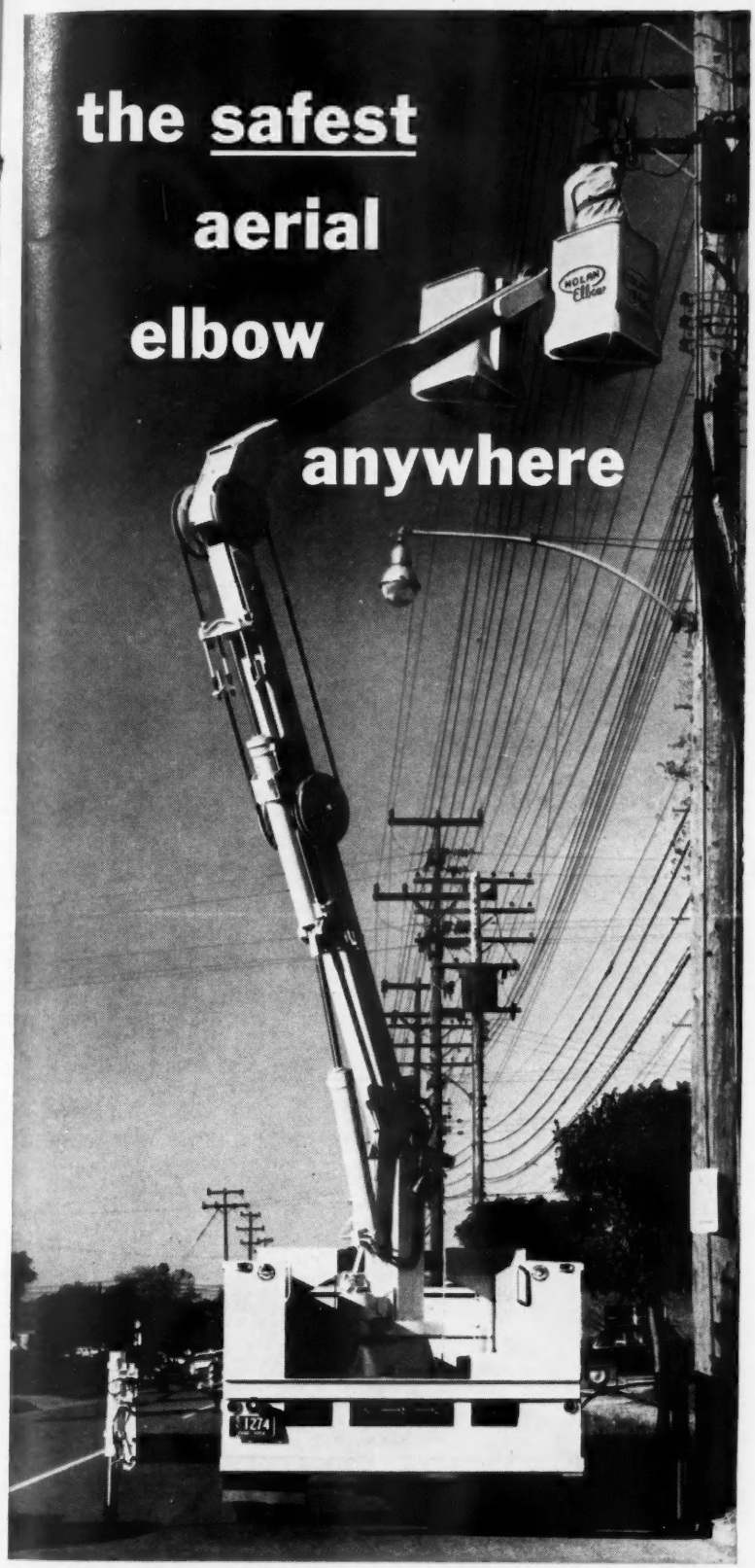
TELEPHONE courtesy is something new in England — and, surprisingly, lots of customers don't like it. The government, which operates Britain's phones, thinks courtesy will give the "telephonist" greater freedom to help the customer.

Sounded fine — on paper. But one "telephonist" reported that she answered a call by saying "Good morning, sir." The startled customer, considerably taken aback, choked out "Good God!"

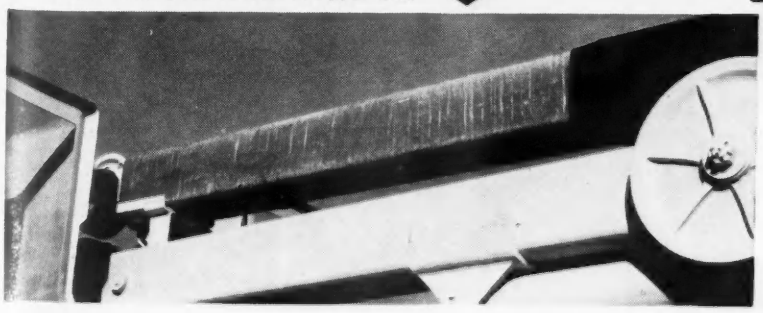
Another customer retorted: "What's the matter with the lot of you up there? I'm not used to this sort of service. Where I come from they say 'What do you want!' "

No wonder Englishmen prefer to write letters.

"That new girl from the business office is a versatile young lady."



Holan fiber glass section in upper arm



Holan Elbow has precise aircraft-type cable controls and strong, non-conductive fiber glass section in upper arm

With a Holan Elbow, it's easy to get to the problem—and safe when you get there.

The exclusive cable control system provides easy, precise spotting of the buckets. And a fiber glass section in the upper arm insulates workmen in the buckets from the ground.

The fiber glass section is solid—*not* metal enclosed with fiber glass. Also, control cables and leveling cables have fiber glass inserts so that men in the bucket are completely separated from metal-to-ground contact. In a bucket-to-ground test, the non-conductive fiber glass section withstood 100,000 volts for one minute.

As for strength, in a separate test the fiber glass section required a 6,200-pound load at end before failing. This is a safety factor in excess of 7 as nominal capacity and weight of the buckets total 800 pounds.

Safety does come first but there are many operating features to talk about, too. Write for all the details.

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